Stereotactic Deep Brain Stimulation for Parkinson’s Disease
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Jorge A Zamudio, CST, MS

Parkinson’s disease (PD) is one of the most common debilitating and chronic neurodegenerative conditions. It affects approximately 1.5 million Americans and there are an estimated 50,000 new cases reported each year. In recent years, innovative developments of computerized imaging and precise coordinate stereotactic technology have made surgery a viable option.

CE EXAMINATION:

Stereotactic Deep Brain Stimulation for Parkinson’s Disease

Jorge A Zamudio, CST, MS

Parkinson’s disease (PD) is one of the most common debilitating and chronic neurodegenerative conditions. It affects approximately 1.5 million Americans and there are an estimated 50,000 new cases reported each year. In recent years, innovative developments of computerized imaging and precise coordinate stereotactic technology have made surgery a viable option.
Forging Ahead

ROY ZACHARIAS, CST, FAST

President’s Message

This is going to be an exceptional year for the Association of Surgical Technologists. 2016 is our year to forge ahead. We are being recognized for our strong leadership abilities, professional attitudes and knowledge of the skills that are required to perform impeccably on a daily basis. Through the dedicated work of every surgical technologist across the country, coupled with state assembly and national leadership from AST, we have firmly established the Certified Surgical Technologist as a strong member of the surgical team. Hospitals and surgical centers across the country are requiring attendance to nationally accredited programs of CAAHEP and ABHES as a portal for eligibility to take the CST exam. Law makers across the country are recognizing the importance of the credential and although there are expected obstacles with legislation in some states, AST’s model bill for surgical technology legislation is moving forward with great speed.

Your membership and participation in AST are vital to the success of our legislative efforts and the profession. Today is the day for every member of AST to begin to identify those in the profession who have yet to join the team. Just as we have a responsibility to our patient on a daily basis to protect them at all costs, we also have a never-ending responsibility to encourage and educate our fellow surgical technologists who have not yet embraced the opportunity to join their professional organization as a member. As everyone is aware, there is strength in numbers, and AST is continuing to grow. I would like to offer the opportunity for every member to identify just one teammate in your facility who is not part of AST. Provide your guidance and encouragement to join our strong organization and enlighten her or him to see how their expertise will enhance the profession. We must grow and become stronger this year.

As I have mentioned before, AST is going to begin a nationwide marketing campaign concerning surgical technology. We will be working with our state assemblies to educate the public concerning surgical technology, encouraging more hospitals and surgical centers to celebrate National Surgical Technologist Week as well as placing an emphasis on educating legislators in states that have active bills under consideration. These efforts will serve to improve involvement and increase our membership across the country.

I would also like to thank our talented surgical technology program directors and instructors for their continued efforts to inform students about AST and the impact it has on their career and their lives. As educators, you are responsible for providing a strong foundation which they will use during the rest of their professional career as a surgical technologist. At the same time, every member of AST can also encourage them to enhance their profession as a student member and eventually as an active member in AST. I am asking for your continued support in this effort.

As we forge ahead into 2016, I want to thank every member of AST for their hard work and dedication to our profession. I ask that you strengthen your knowledge through education and show character through your professional approach in every day interactions. Together, we will continue to be leaders in the surgical care of our patient.
Coated Allis Bone Clamp
Modification of design by Charles T. Resnick MD
A traditional Allis Bone Clamp designed with a longer ratchet—for a wider opening to allow a bone and plate to be clamped and locked onto—and one coated end to prevent from marring a component surface.

Product No: 1381
Overall Length: 6.125" (15.9 cm)
Ratched Clamp Opens to: 35 mm
Non-coated-end Width: 4 mm

Stanton Needle Driver
Designed by John L. Stanton, MD, FACS
Allows a heavy cutting needle such as an O.S.-6 to be pushed through cancellous bone when re-attaching muscle or tendon.

The groove captures the outer (convex) side of the needle and prevents the needle from springing even when applying significant pressure. Useful for reattaching the rotator cuff in rotator cuff repairs, as well as in attaching suture anchors.

Product No: 3042
Overall Length: 6.75" Jaw Width: .25"
EARLY BIRD CONFERENCE REGISTRATION IS $275

AST is offering a substantially discounted registration rate when members register online for the 47th Annual AST Annual National Conference in San Diego. This low rate is only available online beginning February 1 and ending March 15. Click and save.

The AST Conference Registration Guide accompanies this issue of the Journal. Review all the choices and then make your selections. Be ready on February 1 to visit www.ast.org and save!

2016 FREE CE CREDITS

Three free CE credits are now available to members as part of the AST membership benefits. The process is simple – just read the articles and complete the online tests. Your three complimentary continuing education credits will automatically be added to your membership files. These articles are available for the entire 2016 calendar year. Please refer to page 11 in this issue. Membership in AST provides genuine value.
FRIDAY, FEBRUARY 12, 2016
10 am–5 pm AST Registration
8 am–3 pm Accreditation Fundamentals for Educators (AFE)  Separate registration at www.arcstsa.org  4 CEs
3–5 pm ARC/STSA Site Visitor’s Training (SVT)  Separate registration at www.arcstsa.org  Prerequisite: Status as current site visitor or AFE attendance and CAAHEP Site Visitor online training  4 CEs
5:15–5:30 pm Welcome!  AST, ASA, ARC/STSA, NBSTSA
5:30–7:20 pm Laugh for the Health of It  Cea Cohen-Elliott  2 CEs
7:30–8:30 pm Reception

SATURDAY, FEBRUARY 13, 2016 9 CEs
7 am–6 pm Registration
7 am–5 pm Exhibits
8–9:50 am Promoting Teamwork Through Multidisciplinary Scenarios: Teaching in the 21st Century  Don Traverse, CST, FAST; Rebecca Hall, CST, CSA, FAST  2 CEs
10–11:50 am Efficiency in the OR to Ensure Patient Safety and Cost Savings  David Bartczak, CST, OPA-C, LSA, OTC  2 CEs
Noon–12:50 pm Lunch
Please choose one class section from each time period:

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Register online at www.ast.org on the opening page. Click on Instructors Forum registration.

Mail completed registration to: AST, 6 West Dry Creek Circle, Ste 200, Littleton, CO 80120
Fax completed registration to: 303-694-9169
Register by phone: 800-637-7433, ext 2514 (8 am–5 pm MT)
As a professional surgical technologist, you are accustomed to making decisions to expedite your cases and to help your patient achieve optimal health, a common goal of all surgical team members. In a healthy organization, members have the same goals, and everyone enjoys a feeling of inclusion and participation. Ideally, leaders in a well-run organization listen to the ideas put forth by their membership in order to make good decisions. Effective leaders are able to create a team environment and encourage members to pool their talents and come up with creative solutions. By paying attention to your members’ input, your state assembly can stay on track, accomplish its mission, and maintain healthy relationships with its members.

A relationship is not built in a day. So start early. You can begin good long-term relationships through networking. Remember, networking is about giving and receiving. Have you ever had a relative or friend who only contacts you when they want something from you? Do you tend to have a positive attitude toward that person, or do you roll your eyes and groan every time you talk to him or her? Sometimes, it is the same way with people in your profession and your state assembly when she or he feels that their needs are not being met. What can you do to help? When you build your network, base it on relationships. Use the network you already have. Whether you realize it or not, friends, classmates, professors and co-workers are already your network. Talk to them about your plans and have them introduce you to those who share your interests. Maybe you can connect a current student or member with someone they have been trying to meet or let them help with local or state events. In turn, this may benefit your organization through growth.

Relationships are not easy. Leaders must be adaptable to a changing environment and must be involved in order to affect change, not hinder progress. Just as your employer expects a good work ethic, the members of AST expect the same from their leadership. Traits such as being reliable, showing initiative and good social skills are highly valued attributes for those serving as officers, board members and delegates, because they are responsible for decisions affecting the well-being of the entire assembly.

Relationships require hard work and perseverance. Involvement in your state assembly offers new experiences and challenges. Here are some strategies and suggestions you can use to help you to act on behalf of your state assembly.

- be prepared for meetings.
- do not be afraid to ask questions.
- be aware of your goals.
- have a list of concerns to discuss.
- have a list of ideas to promote your organization.
- remember you are the best advocate for your profession.

Just as with any good relationship, your state assembly has to be capable of seizing opportunities and dealing with unexpected problems. As a member of AST, you are essential in making decisions to help your profession grow. Members are essential to the growth and development of the association. As an AST member and advocate, you are already establishing a professional relationship with your peers. This pursuit of professionalism is very important, as it sets the foundation for developing good long-term relationships leading to a healthy and productive state assembly. Remember, all of us have to work to ensure the best possible outcomes for our organization. It starts with you. By working together, we can create positive experiences and healthy relationships.
NEW FREE CE OPPORTUNITIES FOR 2016!

Log onto www.ast.org and click on the “Earn CE” menu to access the library of CEs. Click on the numbers and take the tests for free: #337 – Alternatives to Blood Transfusions – 1.5 CEs; #347 – Damage Control Surgery – 1.5 CE. Credits are awarded after passing the tests.

Whenever. Wherever. AST is making continuing education more accessible—more convenient—and even FREE. Now you can look, listen and learn from our quality education presentations that have been archived from national conferences and advanced specialty forums. Specialty topics range from orthopedics, OB/GYN, general and neurosurgery. You will actually see the medical professionals and slides as they were presenting their information. Each presentation is coded by specialty.

Topics include Intrauterine Repair for Spina Bifida, Pelvic and Acetabular Surgery, Infertility, Drug Abuse During Pregnancy, ACL Surgery, Issues in Patient Care, Advances in Spine Surgery, Epithelial Ovarian Cancer, and Preventing Preterm Delivery. Any or all are free to watch and study.

Whenever you’re ready, take the examination—there is absolutely no charge. If you pass, you will be offered the opportunity to purchase the accompanying CE credit and register it with AST at a very affordable price.
The coronal view of a human brain with Parkinson’s disease. Blue and green areas highlight the fibers of the motor system.
Stereotactic Deep Brain Stimulation for Parkinson’s Disease

Jorge A. Zamudio, CST, MS

Parkinson’s disease (PD), one of the most common debilitating and chronic neurodegenerative conditions, impacts approximately 1.5 million Americans with an estimated 50,000 new cases reported each year. Presently, there is no cure or treatment to slow its progression.1 However, L-dopa therapies are used effectively to provide symptomatic relief of motor dysfunctions. These medications have severe side effects and, despite their use, patients develop motor fluctuations after four to six years.

Innovative developments in computerized imaging and precise coordinate stereotactic technology have made surgery a viable option to bring patients relief. A tiny electrode is implanted through a minimally invasive burr-hole procedure and is guided deep into the brain, targeting specific areas. The electrode is strategically implanted for neurological stimulation with minimal complications or side effects. This procedure, known as deep brain stimulation (DBS), allows PD patients to reduce medications, which lessens side effects, reduces symptoms and dramatically increases quality of life.

HISTORY OF PARKINSON’S DISEASE
The first detailed medical description of PD as a neurological syndrome was published in 1817 by James Parkinson. Based on experimentation and observation, he described the distinctive features of Parkinson’s disease. In the mid-1800s, clinical neurologist Jean-Martin Charcot conducted further research on the disorder and through his findings was able to separate PD from other neurological disorders characterized by tremors, such as multiple sclerosis and Huntington’s disease. During this time,
clinical neurologists Charcot and William Cowers researched standardized treatments for PD. Since then, researchers have determined that probable causes of impaired motor function in PD lie deep within the brain, attributing the impairment to several factors including genetics, environmental and viral (e.g. influenza).

**Symptoms**
Parkinson’s disease targets adults ages 60 and above, but patients in their 40s have reported symptoms of Parkinsonian tremor. Unfortunately, symptoms will not appear until there is an 80% loss of dopamine production in the brain, making early diagnosis difficult.

PD impacts specific motor functions such as speech, balance, posture and gait (pattern of walking) in both men and women. Primary symptoms are a slow and rhythmic tremor; slowed movement (bradykinesia), which may slow facial movements and fine motor coordination; and rigidity, a stiffness or tightness in the muscles affecting the limbs, trunk, neck and even face. As the disease progresses, swallowing food and saliva may become problematic. The patient’s speech may also become quick, hesitant, slurred or monotone.

Research strongly attributes PD symptoms to a loss of dopaminergic neurons (nerve cells) in the substantia nigra, and the presence of Lewy bodies (abnormal clumps of protein) and Lewy nitrates in the substantia nigra. Dopaminergic neurons are specialized in producing neurotransmitters known as dopamine. These neurotransmitters send signals to the receiving “circuitry” in the basal ganglia, more specifically, the striatum. These signals control balance and coordination. When dopamine producers are damaged or die, the striatum does not receive the proper inhibitory and excitatory input from the dopaminergic cells, resulting in impaired movement.

Approximately 50% of PD patients experience depression and anxiety, commonly at the initial onset of the disease. According to the National Institute of Neurological Disorders and Stroke (NINDS), patients may experience sleep apnea, insomnia, catnaps and REM sleep disorders, causing disruption of normal activities. The patient may experience symptoms such as perception disturbances (usually visual), delusions or paranoia. Additionally, apathy (which seems to be the result of physiological changes) and hallucinations and psychoses (which appear to be related to complications from drug therapies) may also occur.

**Pharmaceutical Therapies for Symptom Relief**
As there is no cure for PD, medications available to improve function and quality of life in PD patients include:

- Levodopa, a primary treatment for PD symptoms, converts dopamine in the body and restores dopamine levels in the substantia nigra and striatum to near normal. A common side effect is nausea.
- Carbidopa, used in combination with levodopa, allows for smaller doses of levodopa, thereby reducing side effects.
- Monoamine oxidase inhibitors (MAO-I), which are considered for initial treatment, prolong and enhance the effect of the surviving dopamine cells. Common side effects include orthostatic hypotension, sleep disturbances and agitation.
- Dopamine agonists act like dopamine in the striatum but are not as potent as levodopa. Side effects are nausea, obsessive-compulsive behaviors and nightmares.
- Amantadine is an antiviral drug that reduces stiffness and shaking. Side effects include confusion, ankle swelling and hallucinations.

**Surgical Therapy for Symptom Relief**
Parkinson’s disease treatment has evolved and may incorporate one of several surgical procedures. DBS surgery is commonly recommended when a patient’s motor fluctuations and dyskinesia cannot be managed with medications.

Deep brain stimulation (DBS) is a surgical process rooted in functional stereotactic neurosurgery techniques and was approved by the FDA in 1997. In this procedure, a stimulating lead is implanted deep into the basal ganglia, targeting the globus pallidus internus (GPI), subthalamic nucleus (STN) and ventral intermediate nucleus of the thalamus (VIM).

The implantable lead is flexible and approximately 1 to 10 microns in diameter at the most distal tip. The lead has
up to four electrodes that can deliver electrical impulses to targeted areas in the brain. Its purpose is to block or regulate the abnormal electrical signals within the targeted area to decrease motor symptoms in PD. An intraoperative image-guided navigation system is used to position the stimulation lead inside the brain. Real-time MRI/CT imaging is necessary to pinpoint the exact targeted location.

After the lead is implanted, it is securely attached to the skull. The power source is a computerized implantable pulse generator (IPG), which is battery operated and attached to the electrodes, similar to a pacemaker. The IPG is implanted in the subclavicular region of the chest wall. With the employment of a transcutaneous programmer, the parameters of the stimulation can be refined at any time. The wire connecting the lead and the IPG is channeled through the soft tissue of the neck.

**PREPARATION AND SETUP**

The CST should be prepared to anticipate any eventuality during the procedure and ensure that all instrumentation listed for the craniotomy are available and functioning perfectly. In addition, the CST should be familiar with the setup and operation of the stereotactic system and other equipment necessary for the surgery.

Preparing the room and setting up for a stereotactic DBS surgery can be time consuming and may take between 30 minutes to one hour, depending upon availability of supplies and equipment and the CST’s experience in neurosurgery. Experience in assembling the stereotactic system is also beneficial. The abilities to plan ahead and manage time well are critical.

When setting up, the CST ensures all sterile and necessary instrumentation and equipment are inside the surgical suite. He or she ensures furniture, lights and equipment are plugged in and tested to ensure functionality and verifies that the surgical table is CT imaging compatible. The CST also inspects the sterile packs and instrument sets for package integrity, verifies that all chemical and biological indicators validate exposure to a sterilization process, and ensure that all instrument trays are free of moisture before placing them onto the back table.

The CST must prepare all topical hemostatic agents beforehand, in anticipation of any bleeding emergencies. Thrombin, Surgicel®, Gelfoam® and Avitene™ are cut in various sizes as is customary for any craniotomy procedure. Intraoperative medication (lidocaine, antibiotic irrigation, and antimicrobial solution for skin preparation) must be ready and properly labeled.

If a patient allergy is noted (e.g., latex, iodine, etc.), the CST ensures that the surgical field is free of supplies containing the allergen. Blades and sutures are also handled with care and placed in a safe, but visible location to avoid sharps injuries.

Availability of a draped Mayo stand will help increase the working landscape for storage of power drills and instrumentation needed for immediate use. At any point during the setup of the back table, the circulator may dispense medication and irrigation solutions to the field with the assistance of the CST to preserve sterility. Preoperative counts should be performed by the CST and circulator during setup of the back table.
Experimental guided probes into the brain were originally recorded in 1873. In 1947, the stereotactic system was officially introduced for human brain surgery by Spiegel, et al. Several types of stereotactic frames are in existence and this article will describe use of a frame-based system.

If a frame-based stereotactic system (FBSS) is used, it is comprised of two different components that are opened and assembled separately. The frame is attached to the patient’s head to provide accurate coordinates of the brain preoperatively. A semicircular arc and other accessories are kept sterile and attached at the time of surgery. The FBSS has calibration marks that gives the surgeon the necessary information to maneuver the electrodes used in DBS into position with strategic accuracy. Once the frame is in place, magnetic resonance (MR) images or computed tomography (CT) scans are taken during the operation to map the precise location in the brain. This allows the surgeon to tunnel electrode(s) to the targeted area(s). Immediately after the procedure, imaging is again performed to ensure accurate placement of the lead and to check for hemorrhaging. The patient is awake during the stimulation procedure, allowing for physiological monitoring to confirm the electrode placement is accurate and generating the desired effect. This process is minimally invasive and is usually done with the patient under local anesthesia on an outpatient basis.

Alternatively, a frameless stereotactic image-guided navigation system may be used. The newer technology allows for 3-dimensional, real-time, CT or MRI driven navigation. The frameless device attaches to the Mayfield head holder and allows preoperative digital imaging to be programmed into the device which allows the surgeon to make smaller incisions in the accurate location and results in less damage to nearby functional tissue.

**Planning and Preoperative Imaging**

Deep brain stimulation using stereotactic technology surgery is an effective, but lengthy procedure and requires a multiple step process. Careful planning before starting the procedure is critical.

**Frame-based stereotactic system**

On the day of surgery, the patient is brought to the surgical suite where the neurosurgeon places the stereotactic coordinated frame around the patient’s head, which will stay in place for the duration of surgery. The frame, in conjunction with a MRI localizer, creates a Cartesian 3D image with X, Y and Z coordinates. Any shift of the frame would result in an intraoperative error in targeting areas of the brain. Accurate positioning of the frame and tight fixation to the skull is vital to:

- determine the working volume of the brain,
- identify the intercommissural line (ICL), used as a landmark to locate the targeted structures within the midbrain,
- set the preliminary coordinates for entry point and trajectory.

The typical targeting area for Parkinson symptoms is the basal ganglia system, more specifically the globus pallidus internus (GPI) and subthalamic nucleus (STN) for tremor, rigidity, bradykinesia, dyskinesia, dystonia and motor fluc-
tations. The ventral intermediate nucleus of the thalamus (VIM) is targeted for upper extremity tremor only.7

To secure the frame to the patient’s head, the patient is placed in a sitting position. The assistant holds the frame while two or three folded towels are placed on top of the patient’s head. The frame and MRI localizing box are positioned exactly in the midline using the lateral canthi and zygomatic arches as landmarks. The frame is secured to the patient’s skull using four fixation pins similar to those used on a Mayfield® head-holding frame.

Fixing the frame on the patient’s head can be very painful. Therefore, a combination of mild sedation and lidocaine 1% is injected into the skull at the point of entry of each fixation screw. The surgeon premeasures the length of the screw needed (i.e. the distance between the frame screw links and the skull) using a covered hypodermic needle. The surgeon then chooses the appropriate screw sizes and begins tightening one-by-one across opposite corners using a screwdriver and a torque wrench set to a three foot-pound pressure as a final adjustment.

The patient is then transported to the radiology department. Once the images are taken, the patient is brought back to the surgical suite. Some facilities have their operating rooms integrated with sophisticated state-of-the-art MRI and CT imaging equipment. In this case, frame attachment and preoperative scanning takes place in the surgical unit.

Positioning

Once the patient is brought back to the operating room from the radiology department, he is positioned on the operating table. At this time, preparations are made to address all special patient considerations. The CST is expected, as a key member of the surgical team, to be aware of all steps taken in this process and notify the rest of the team if a problem arises.

First and foremost, the surgical team confirms that appropriate operating table is used to allow CT scanning equipment to pass underneath. The patient is positioned with shoulders flush to the most superior end of the removable headpiece of the surgical table. Assistance is needed to hold the patient’s head while the stereotactic frame is attached to the Mayfield® swivel headrest and to the surgical table.

The team also anticipates the patient will be awake and laying on the surgical table in supine or semi-fowler (partially sitting) position for at least three to four hours, possibly more. Adequate padding (i.e., egg-crate, pillows, etc.) under the patient’s bony areas is essential for minimizing discomfort that could cause patient movement or vascular and nerve damage. The anesthesiologist places vital signs monitoring devices on the patient to monitor anesthesia care, and carefully selects all medication, diuretics, antibiotics and hemostatic drugs.

During this time, the circulator inserts a Foley catheter into the patient’s bladder; places the electrosurgical grounding pad to prevent the patient from getting burned when using the electrosurgical pencil; applies compression stockings and sequential compression leggings to the patient’s lower extremities to improve circulation and reduce the risk of pulmonary embolism, vascular stagnation or postoperative phlebitis; and covers the patient’s body with a Biar Hugger™ and a warm blanket to decrease the potential for hypothermia.

The patient is properly situated on the surgical table, an intraoperative imaging device is positioned around the patient’s head for intraoperative stealth imaging and a lead apron and thyroid shield is placed on top of the patient for radiation protection. The surgeon shaves the incision site, and appropriately measures and marks the incision site with a surgical skin marker.

Mounting of stereotactic arc

Attaching the stereotactic arc to the frame is a two-step process:

During the first step, the sterile stereotactic arc sup-
ports and slides are connected to the nonsterile frame. Wearing sterile gloves, the neurosurgeon sets the predetermined Z coordinates on the “arc supports” and “slides” then slides it onto the right side rail of the nonsterile frame, taking care that the proximal rings of the arc supports do not get contaminated.

Assistance from the anesthesiologist or resident may be necessary to hold the distal end of the arc supports while the surgeon tightens the screw using a sterile screwdriver. The same process is repeated on left side. Once both right and left sides are attached, the surgeon sets the calculated Y coordinates. Screws locking Z and Y coordinates must not be firmly tightened to avoid difficulties re-adjusting coordinates during surgery. The screwdriver used in this first part of the process is discarded. The CST ensures that a second screwdriver remains sterile on the back table for intraoperative use if necessary.

**Skin preparation, draping and time-out**
The sterile team members wear lead aprons and thyroid shields, scrub their hands, and don sterile gowns and gloves with the assistance of the CST. Meanwhile, the circulator preps washes the patient’s head with 2% chlorhexidine gluconate and applies 7% alcohol. After the alcohol is dry, the
CST passes a chlorhexidine applicator to the surgeon to perform the antimicrobial skin prep. A transparent drape with an adhesive surface is placed on top of the prepped area and the sterile field is created over the O-arm, separating the anesthesia area from the sterile field. The CST passes the surgeon a straight Mayo scissors to make a small hole on the drape to expose the right and left arc support ring plates, then seals the holes with strips of adhesive drape material that has been treated with an antimicrobial to prevent cross contamination.

A surgical time-out is called and each team member gives his/her name and role. At this time, the surgical team goes over the patient’s name, surgical site and procedure. They review whether the patient has received any medications within the last hour or if he has any specific allergies, conditions and concerns that may require additional intervention.

SURGICAL INTERVENTION

Once time-out is complete, the surgeon sets the X coordinates on the arc and attaches the axis rings to the arc supports, then asks the CST to hold the arc while hand tightening the screws on both right and left sides. A series of CT images are taken to determine the trajectory established by the initial MRI. X, Y and Z coordinates are confirmed.

The surgeon then identifies the coronal suture and attaches the guidance/positioning device to the arc at the predicted angle. With the assistance of the CST, the surgeon inserts the reducer cannulas into the device; feeds a probe through the center; marks the incision site for the burr hole at the point of contact with the scalp; pivots the arc superiority away from the incision site; and injects lidocaine 1%.

Instrumentation needed for a stereotactic DBS is minimal. However, the CST must be aware of every step of the surgical process to anticipate the surgeon’s needs during surgery. The CST passes a #10 blade and an x-ray detectable-sponge to the surgeon. The surgeon makes a 1.5-inch curved skin incision on the right side of the skull, approximately two centimeters lateral to the midline anteriorly to the coronal suture into the frontal bone. The CST has a monopolar electrosurgical pencil ready for coagulation. Raney clips may be offered to the surgeon for additional bleeding control.

After hemostasis is attained, the CST may offer a shallow non-penetrated self-retaining scalp or Weitlaner retractor for increasing exposure. A small periosteal elevator is also passed to separate the periostem layer from the bone. The surgeon rechecks the arc by inserting the metal probe again and adjusts the guidance/positioning device to position. A 14 mm cranial perforator is passed by the surgical tech to the surgeon who creates a dime size burr hole.

The CST gently irrigates the wound with sterile saline, while the surgeon perforates the skull with one hand and with the other holds a #7 Frazier suction tip to prevent fluid from building up. Once the skull is fully penetrated, the surgeon removes bone particles from trepanation and may choose to smooth down the inner edge of the burr hole with a bone curette and a fine 1 mm, 45-degree Kerrison rongeur, if necessary. At this time, the CST may offer a small piece of bone wax loaded on a #4 Penfield or Freer elevator to gain hemostasis in the bone. A polyethylene burr hole ring is passed to the surgeon who secures it into the burr hole.

The CST is ready with a #11 blade for incising the dura matter; makes sure a bipolar forceps is on the surgical field for hemostasis; and is ready with absorbable gelatin sponges steeped in topical thrombin and cottonoids for bleeding control. The surgeon performs a durotomy with the 11 blade and the incision is slightly enlarged using a fine Metzenbaum scissors, the dura edges are coagulated with a bipolar forceps. Then, the surgeon applies thrombin soaked absorbable gelatin sponges and a ½” x ½” cottonoid to achieve complete hemostasis and minimize CSF (cerebrospinal fluid) loss. Exposing the dura matter reduces intracranial pressure causing the brain to shift from its original position, consequently a sequence of CT images are recorded to reconfirm trajectory to avoid damaging any visible vessels. The guidance/positioning device is adjusted to its final location.

When final adjustments are made, the patient is awakened to perform the electrophysiological tests and remains awake for the rest of the surgery. Following, the CST passes a 1.45 mm inner diameter and 168 mm length guide cannula with stylet to the surgeon who inserts it through the guidance/positioning device and confirms trajectory one more time. Then, the surgeon slowly proceeds to advance the microelectrode into the midbrain-targeted area under continuous fluoroscopy. A ground electrode is attached to the guide cannula and the distal end of the microelectrode is connected to a recording electrode.

A movement specialist neurologist performs basic somatosensory evoked potentials (SEP) tests, thereby ensuring the microelectrode is in the precise location. It should be noted that in the event the microelectrode is not in place, a second microelectrode may be inserted using a different trajectory. During SEP, the patient is asked to move hands and legs, touch nose, count from 1-10, as the
The surgeon adjusts the depth of the electrode to a precise position. Sound waveforms produced by brain activity are recorded throughout this process. After correct placement of microelectrode is reached, the surgeon removes the microelectrode, installs the external guide piece on the guidance/positioning and inserts the implantable DBS lead. The CST verifies that the correct item was opened and places the stylet inside the implantable lead before passing it to the surgeon.

Following insertion of the implantable lead, a sequential CT scanning is performed through cross hairs to confirm accuracy. Microstimulation is performed. The patient is asked about side effects and symptom relief. The lead is gently secured in the burr hole ring slot and capped to lock it in place. Stimulation is rechecked to make sure the lead did not shift position. If the implant moves, the implantation process must start all over.

When correct placement of DBS lead is confirmed, the stereotactic device is removed. The excess lead is coiled around the burr hole ring; the distal end is tunneled down to the right side of the skull and concealed beneath the scalp. At this point, incision for the burr hole is irrigated with saline, dried and the epicranial aponeurosis is sutured in layers using 2-0 polyglactin 910. The skin is then closed with staples. While closing, the CST and circulator perform a final count of all instruments and sterile supplies used during surgery.

When closure is complete, the patient’s head is washed with sterile solution and dried. The stereotactic arc is detached from the coordinate frame; the O-arm is pulled away and drapes are disposed of in the biohazard container. Anterior and posterior head pins holding the frame are unscrewed with the assistance of a neurosurgical PA or resident.

The frame is then detached from the patient’s head and removed from the surgical table along with the Mayfield® head holder frame. The headrest attachment is put back in the surgical table. A 4x4 dressing sponge, folded in half, is used to cover the incision and a large waterproof transparent dressing is placed on top to secure the dressing.

Implantation of IPG device can be performed immediately after the DBS procedure or on another day. When implanting the IPG, the patient is placed under general anesthesia and a typical tunneling technique is performed after the right upper chest area, neck and right side of the head are prepped and draped accordingly.

An incision is created with a #15 blade at the right side of the skull where the distal end of DBS lead was buried and exposed. A Bozeman uterine forceps is tunneled down to the post auricular area to create a skip incision. The distal end of DBS lead is then pulled through using a flexible tunneling device and exposed. A subcutaneous pocket is created to accommodate the IPG. The tunneling device is pushed down from the skip incision to reach the subclavicular incision. An extension lead is attached to the tunneling device and pulled back subcutaneously until reaching the skip incision. DBS and extension leads are connected. The extension lead is then secured to a unilateral Solera IPG using the kit’s torque wrench.

After connecting the IPG to the DBS lead, the subclavicular pocket is irrigated, the generator is inserted, the subcutaneous layer is closed with 2-0 polyglactin 910, and the skin is closed with 4-0 poliglecaprone 25. Skip and scalp incisions are closed using interrupted 3-0 nylon stitches. The
patient is washed with sterile saline and dried. Incisions are covered with clean 4x4 dressing and a waterproof transparent dressing on the subclavicular area, and a folded 2x2 and small waterproof transparent dressing on the scalp incisions. Then patient is extubated and awakened. The IPG is turned on and amplitude, frequency and pulse width are adjusted to fine-tune the stimulation to the targeted brain cells and provide maximum benefit to the patient. Symptom relief may be felt by the patient almost immediately.

When adjustments are concluded, the patient is given a handheld magnet to turn the stimulator on and off when needed. He is disconnected from the vital sign monitoring, carefully transferred to stretcher and sent to PACU for recovery and post-operative monitoring. At this point, the CST breaks scrub, collects reusable surgical instrumentation to be sent to central processing, and disposes of non-reusable items (sharps, sponges, etc.) according to universal precautions guidelines.

ASSOCIATED BENEFITS AND RISKS
The most obvious benefits associated with the DBS procedure are the disappearance of primary symptoms almost instantly after appropriate calibration of IPG and the reduction of secondary symptoms. In addition, the procedure is reversible. The system may be removed without damage to the brain or adjusted as the patient’s condition changes. The patient experiences quick recovery due to the minimally invasive nature of stereotactic technology. The stereotactic DBS guides allow for more precise placement of electrodes and enhances results, including reduced medication and side effects.7

As in any surgical procedure, risks are always involved. However, intraoperative complications in stereotactic DBS are considered minimal. Potential death is less than 1%, intracranial hemorrhage (stroke) 2-3%, surgical site infection 1.7%, and seizures 1.5%. Other postoperative complications may include weakness or numbness, garbled speech, dizziness, headache and CSF leak.7,10

ABOUT THE AUTHOR
Jorge A. Zamudio, CST, MS, graduated from Bergen Community College as a surgical technologist in 1995 and has worked in the surgical field ever since. He earned a BA in psychology from Bloomfield College in 2009 and a MS in organization leadership in 2011. His passion for teaching has led him to train surgical technology students for various operating rooms throughout the New York and New Jersey area. In 2008, he became a dedicated faculty member. Currently, he is employed by Kingsborough Community College – CUNY as a full-time faculty for the surgical technology program.

REFERENCES
Stereotactic Deep Brain Stimulation for Parkinson’s Disease

1. Which of the following is true about Parkinson’s Disease (PD)?
   a. Fine motor functions are impacted.
   b. Dopamine production drops.
   c. A common side effect is nausea.
   d. All of the above.

2. One possible cause of PD is ____________________.
   a. Tremors
   b. Environmental Toxins
   c. Multiple Sclerosis
   d. None of the above

3. Neurotransmitters in the striatum impact a patient’s ______? 
   a. Balance and coordination
   b. Memory
   c. Immune System and Healing
   d. Breathing

4. In deep brain stimulation (DBS) the electrode stimulates the what? 
   a. Basal ganglia
   b. Amygdala
   c. Vagus nerve
   d. Superior colliculus

5. Which of the following positions could be used for this surgical procedure: 
   a. Lateral
   b. Prone
   c. Semi-Fowlers
   d. Trendelenburg

6. How many fixation pins are used to secure the frame to the head? 
   a. 6
   b. 4
   c. 3
   d. 2

7. During this procedure, which is not implanted into the patient? 
   a. Delete Medtronic Lead
   b. Pulse generator
   c. Stereotactic guidance/positioning system
   d. All are implanted

8. What size surgical blade is used to incise the dura matter? 
   a. Number 3
   b. Number 7
   c. Number 11
   d. Number 15

9. Once the microelectrode is placed, ______ will be performed by a movement specialist neurologist to adjust the depth of the electrode. 
   a. Somatosensory Evoked Potentials tests
   b. Magnetic Resonance Imaging
   c. Positron emission tomography analysis
   d. Lead generation testing

10. Which is the least likely postoperative complication of this surgery? 
    a. Surgical site infection
    b. Seizure
    c. Intracranial hemorrhage
    d. Death

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I don’t remember exactly how and when I received my calling to go back to school and become a surgical technologist, I just remember that when I got it, it was a physical hunger, an emptiness that constantly consumed me. The more I thought of having a career in which I assisted surgeons in surgical procedures, the hungrier I got. In 2001, I graduated from the surgical technology program at Del Mar College in Corpus Christi, Texas. I am a Certified Surgical Technologist at Driscoll Children’s Hospital and a surgical technology adjunct clinical instructor.

The life of a surgical technologist is a life that very few people understand. Surgical technologists wake up early; very early to prepare for surgeries that are scheduled to begin at 7 or 7:30 am. We meet our work families at the assignment board in our scrubs, paper hat and shoes with covers. We pray, have a short meeting, and receive our assignments for the day. From that moment on, the patient assigned to me and the surgery he or she is about to have is the most important thing on my mind. I know that my patient will be in a vulnerable state, and I have to make sure that everything I do will help the surgeon accomplish what needs to happen during the procedure.

In the operating room suite, I work with a circulating nurse and an anesthesia provider. Each member of the OR team has a job to do; and each member has to have some knowledge of the other member’s job in order to be able to help each other out. It is not surprising to see someone stepping out of their role to help someone do another job.

The surgical technologist sets up and works from a backtable and a smaller table called a Mayo stand. Depending on the surgical procedure, setting them up can be time consuming. Some surgical procedures require me to set up with 10-12 instrument pans. Most of the instrument pans are light, but there are some heavy ones so I have to make sure I use proper technique for lifting.

Setting up the backtable requires a great deal of planning. I have to imagine the actual surgery to make sure I have gowns, and gloves for every person scrubbing in, every drape, instrument, and medication that I will need and where I need it. I need to know, or find out details, such as the positioning of the patient, what side the surgeon will stand on and also if the patient is larger than the average patient. Every instrument that the surgeon will need must be placed in a spot that is easily accessible. Every medication required will need to be drawn up in the correct syringe with the correct needle and labeled correctly. Suture needs to be ready.

Some days I feel that time is my worst enemy. On busy days, it seems as though there is no time to finish everything. I have to be completely ready when the surgeon asks for the blade to make the incision. It is so stressful sometimes that I can feel myself sweating under my surgical gown. I don’t get breaks and lunches at a specific time. I get them whenever there is someone available to relieve me -- and sometimes I don’t get them at all! There are surgeries that run 30 minutes and some that run for hours. I spend most of the day standing, so I am exhausted at the end of my shift.

And even considering all of that, I absolutely love being a surgical technologist! I would not trade it for any other job. It is a very rewarding and challenging career. I love the stress and the challenges that my job gives me, and I love making a difference in another person’s life. And when I am standing next to a surgeon in surgery passing instruments, holding a retractor in someone’s abdomen, holding a heart in my hand, wearing a bubble suit to help repair a hip or knee, helping expose a brain to remove a malignant tumor I know that I will go home knowing I did my Lord’s work.

After all, we are in His hands.
The Oregon State Assembly threw a party to celebrate the successful enactment of “Turner’s Law.” This new law created minimum education standards, certification and continuing education standards for surgical technologists working in Oregon. The law was named in recognition of Deborah A Turner, CST, CSFA, who laid the groundwork, engaged and empowered fellow surgical technologists more than 10 years ago. Her steadfast work, combined with the commitment by other Oregon practitioners, resulted in legislators becoming familiar with the issue and eventually ready to listen.

Tara Kruse, CST, carried the torch, and the legislation was introduced February 4, and Oregon members, together with AST, negotiated with the Oregon Hospital Association and received heavy support from Representative Mitch Greenlick, chair of the House Health Committee and Representative Knute Buehler, MD, a physician and committed civic leader. The bill passed the House on April 27 and was heard in the Senate that May. It passed the Senate on June 2. It becomes effective July 1, 2016.

In October, the Toast to OAST was on with members of the Oregon State Assembly who joyously celebrated the culmination of the more than 10-year legislative challenge. Congratulations to Oregon!
THE TOAST TO OAST

A toast to OAST!! You all are the best! You’re such an example to all of the rest!

Letters and meetings and Capitol trips; You carried it off with a smile on your lips.

You took on the hospitals, rallied the docs; You never said never! Your energy rocks!

Melissa and David, of course Michael Hearn, Carol, Victoria – all had a turn.

“Our patients deserve this!” you said with a cheer; “We’ll never give up!” you said year after year.

You testified, emailed, and got on the phones; You used every tactic excepting the drones.

Thanks to Deb Turner, and Tara and Don! Their hard work and passion helped get the job done.

To members who wrote, and called in, and came, We honor you all – if we just missed your name!

So raise up your glasses and all take a bow! To “TURNER’S LAW” – and to YOU!

CONGRATS AND WOW!!

Carol Hogenkamp, CST and Deb Turner, CST, CSFA.

Most of OAST: First Row: Tara Kruse, CST; Don Dreese, CST; Victoria Fleming, CST. Second Row: Lindsey Grimes, CST; Sonia Lopez, CST; Melissa Garinger, CST; Lori Haugen, CST; and TJ McNulty, CST. Not pictured: OAST Board Members: Keri Ferraro, CST and Becki Scott, CST.
Congratulations and thank you to all the practitioners who are named on the following pages. They have been members of AST for 20 or more years, as of January 1, 2016, and we are proud to recognize their commitment to this organization and this honorable profession.
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ALABAMA
Montgomery: February 27, 2016. Alabama State Assembly Annual Meeting and Elections 2016. Location: Virginia College, 6200 Atlanta Hwy, Montgomery, AL 36117. Contact: Ashley Sylvester, PO Box 8881, Mobile, AL 36689, 251-303-9170, ashley7morgan@gmail.com. 6 CE credits, pending approval by AST.

ARKANSAS
Marked Tree: April 2, 2016. Arkansas State Assembly. Title: Spring Workshop. Location: Arkansas State University–Newport, 33500 Hwy 63 East, Marked Tree, AR 72365. Contact: Katie Bishop, 719 Shamrock Dr, North Little Rock, AR 72118, 501-519-2070, kady@kadys bishop.com. 8 CE credits, pending approval by AST.

CONNECTICUT
Bridgeport: March 19, 2016. Connecticut State Assembly. Title: Explorations of Modern Cardiovascular Procedures. Location: Saint Vincent’s Medical Center, 2800 Main St, Bridgeport, CT 06606. Contact: Richard Demko, 31 Smith St, Seymour, CT 06483, 203-500-1736, rdemko cst@aol.com. 6 CE credits, pending approval by AST.

IDAHO
Meridian: January 12, 2016. Idaho State Assembly. Title: January Free CE Event. Location: Smoky Mountain Pizza, 980 E Fairview, Meridian, ID 83642. Contact: Leah Guill, 6120 Grand Prairie Dr, Boise, ID 83716, 208-596-1774, leahmariewagner@gmail.com. 1 CE credits, pending approval by AST.

FLORIDA
Jacksonville: March 12, 2016. Florida State Assembly. Title: Florida Bone Feast. Location: Radisson Hotel, 4700 Salisbury Road, Jacksonville, FL 32256. Contact: Max Obando, PO Box 600961, Jacksonville, FL 32260, guillermo.Obando@jax.ufl.edu. 6 CE credits, pending approval by AST.

GEORGIA
Atlanta: March 12, 2016. Georgia State Assembly. Title: Emory Teaches the GASA. Location: Emory University Hospital, 1364 Clifton Road, Atlanta, GA 30322. Contact: L. Gene Burke, Jr., PO Box 4131, Canton, GA 30114, 706-771-4191, lburke@augustatech.edu. 7 CE credits, pending approval by AST.

Tybee Island: September 10, 2016. Georgia State Assembly. Title: GASA heads to the Beach! Location: Hotel Tybee, 1412 Butler Ave (For GPS Use) 1401 Strand Ave (Business Office), Tybee Island, GA 31328. Contact: L. Gene Burke, Jr., PO Box 4131, Canton, GA 30114, 706-771-4191, lburke@augustatech.edu. 8 CE credits, pending approval by AST.
<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Event</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boise, ID</td>
<td>April 12, 2016</td>
<td>Idaho State Assembly</td>
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<tr>
<td></td>
<td></td>
<td>Title: April Free CE Event</td>
<td><a href="mailto:leahmariewagner@gmail.com">leahmariewagner@gmail.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Location: Grind Modern Burger, 705 Fulton, Boise, ID 83702.</td>
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<tr>
<td></td>
<td></td>
<td>Contact: Leah Guill, 6120 Grand Prairie Dr, Boise, ID 83716, 208-596-1774, <a href="mailto:leahmariewagner@gmail.com">leahmariewagner@gmail.com</a>.</td>
<td>1 CE credits, pending approval by AST.</td>
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<tr>
<td>Boise, ID</td>
<td>June 14, 2016</td>
<td>Idaho State Assembly</td>
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<tr>
<td></td>
<td></td>
<td>Title: June Free CE Event</td>
<td><a href="mailto:leahmariewagner@gmail.com">leahmariewagner@gmail.com</a>. 1 CE</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Contact: Leah Guill, 6120 Grand Prairie Dr, Boise, ID 83716, 208-596-1774, <a href="mailto:leahmariewagner@gmail.com">leahmariewagner@gmail.com</a>.</td>
<td>1 CE credits, pending approval by AST.</td>
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<tr>
<td>New Orleans, LA</td>
<td>March 12, 2016</td>
<td>Louisiana State Assembly</td>
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<tr>
<td></td>
<td></td>
<td>Title: Spring Workshop 2016 and Annual Meeting.</td>
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<tr>
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<td>Location: Francis Medical Center, 530 NE Glen Oak Ave, Peoria, IL 61550, 309-263-7495 or 309-264-4532, <a href="mailto:mbrook1@outlook.com">mbrook1@outlook.com</a>.</td>
<td>4-5 CE credits, pending approval by AST.</td>
</tr>
<tr>
<td>Peoria, IL</td>
<td>March 5, 2016</td>
<td>Illinois State Assembly</td>
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<tr>
<td></td>
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<td>Title: ISA Annual Meeting, Elections &amp; Seminar.</td>
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<tr>
<td></td>
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<td>Location: OSF Saint Francis Medical Center, 530 NE Glen Oak Ave, Peoria, IL 61637.</td>
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<tr>
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<td>Contact: Marsha Brook, 1828 S 2nd Ave, Morton, IL 61550, 309-263-7495 or 309-264-4532, <a href="mailto:mbrook1@outlook.com">mbrook1@outlook.com</a>.</td>
<td>6 CE credits, pending approval by AST.</td>
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<tr>
<td>Wichita, KS</td>
<td>March 5, 2016</td>
<td>Kansas State Assembly</td>
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<tr>
<td></td>
<td></td>
<td>Title: Kansas State Assembly 2016 Spring Workshop and Business Meeting.</td>
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<td>Location: Wichita - TBA.</td>
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<td>Contact: Ana Fraire, 2320 E Macarthur Road Lot A3, Wichita, KS 67216, 316-619-8982, <a href="mailto:elim_alf@hotmail.com">elim_alf@hotmail.com</a>.</td>
<td>6 CE credits, pending approval by AST.</td>
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<td>6 CE credits, pending approval by AST.</td>
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<tr>
<td>St. Louis, MO</td>
<td>March 4-6, 2016</td>
<td>Missouri State Assembly</td>
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<td></td>
<td></td>
<td>Title: Missouri State Assembly Spring Workshop.</td>
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<td>Location: Anoka Technical College, 1355 W Main St, Anoka, MN 55303.</td>
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<td></td>
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<td>Contact: Melissa Stolp, 19414 Eaton St NW, Elk River, MN 55330, 763-229-2321 or 763-712-1278, <a href="mailto:halfpint71mel@aol.com">halfpint71mel@aol.com</a>.</td>
<td>7 CE credits, pending approval by AST.</td>
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<tr>
<td>Anoka, MN</td>
<td>March 12, 2016</td>
<td>Minnesota State Assembly</td>
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<td>Title: Minnesota State Assembly Spring Workshop.</td>
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<td>Location: Anoka Technical College, 1355 W Main St, Anoka, MN 55303.</td>
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<td>Contact: Melissa Stolp, 19414 Eaton St NW, Elk River, MN 55330, 763-229-2321 or 763-712-1278, <a href="mailto:halfpint71mel@aol.com">halfpint71mel@aol.com</a>.</td>
<td>7 CE credits, pending approval by AST.</td>
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<tr>
<td>Omaha, NE</td>
<td>August 13, 2016</td>
<td>Nebraska State Assembly</td>
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<tr>
<td></td>
<td></td>
<td>Title: Nebraska State Assembly 2016 Summer Workshop.</td>
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<td>Location: CHI Health Lakeside, 16902 Lakeside Hills Court, Omaha, NE 68130.</td>
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<td>Contact: Casey Glassburner, 1001 N 151st St, Waverly, NE 68462, 402-580-0057, <a href="mailto:cglassburner@southeast.edu">cglassburner@southeast.edu</a>.</td>
<td>6 CE credits, pending approval by AST.</td>
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<td>6 CE credits, pending approval by AST.</td>
</tr>
</tbody>
</table>
Hospital – Bruce E Siegel Center, 5975 E Broad St, Columbus, OH 43213. Contact: Tracie Parsley, PO Box 1093, Mentor, OH 44061, 614-864-7929, tracieparsley@gmail.com. 11 CE credits, pending approval by AST.

OKLAHOMA
Oklahoma City: March 5, 2016. Oklahoma State Assembly. Title: OKSA Workshop & Business Meeting. Location: Wright Career College, 2219 W I-240 Service Road Suite 124, Oklahoma City, OK 73159. Contact: David Hackett, 2219 W I-240 Service Road Suite 124, Oklahoma City, OK 73159, 405-753-0844, dhackett@wrightcc.edu. 4 CE credits, pending approval by AST.

OREGON
Springfield: March 5, 2016. Oregon State Assembly. Title: Spring Conference. Location: Sacred Heart Medical Center at Riverbend, 3333 Riverbend Dr, Springfield, OR 97477. Contact: Melissa Garinger, 3471 7th St, Hubbard, OR 97032, 503-318-1577, mgaringeroast@gmail.com. 7 CE credits, pending approval by AST.

PENNSYLVANIA
Harrisburg: March 19, 2016. Pennsylvania State Assembly. Title: PA-AST Annual Spring Meeting. Location: PinnacleHealth – Community General Osteopathic Hospital, 4300 Londonderry Road, Harrisburg, PA 17109. Contact: Darin Smith, PO Box 3051, Williamsport, PA 17701, 717-422-4258, director5paast@gmail.com. 6 CE credits, pending approval by AST.

SOUTH DAKOTA

TENNESSEE

TEXAS
Port Arthur: January 30, 2016. Texas State Assembly. Title: Port Arthur Workshop. Location: Lamar State College, 1701 Procter St, Port Arthur, TX 77641. Contact: Stefanie Steele-Galchutt, PO Box 3381, Wichita Falls, TX 76301, 817-235-1660, TXStateAssembly@gmail.com. 8 CE credits, pending approval by AST.

WEST VIRGINIA
Huntington: April 30, 2016. West Virginia State Assembly. Title: Spring Workshop. Location: HIMG – Huntington Internal Medicine Group, 5170 US Route 60 East, Huntington, WV 25705. Contact: Kimberly Miller, PO Box 983, Dellslow, WV 26531, 304-415-3341, klucionmiller@aol.com. 6 CE credits, pending approval by AST.

UTAH
Murray: March 19, 2016. Utah State Assembly. Title: Trauma not Drama. Location: Intermountain Medical Center, 5121 Cottonwood St, Murray, UT 84157. Contact: Annette Montoya, PO Box 986, West Jordan, UT 84084, 801-889-5947, ast.utah@gmail.com. 4 CE credits, pending approval by AST.

VIRGINIA
Richmond: March 19, 2016. Virginia State Assembly. Title: United in Surgery. Location: St Mary’s Hospital, 5801 Bremo Road, Richmond, VA 23226. Contact: Tina Putman, 173 Skirmisher Lane, Midlothian, VA 22259, 804-868-7066, tputman@lfcc.edu. 5 CE credits, pending approval by AST.

WISCONSIN
Summit: March 12, 2016. Wisconsin State Assembly. Title: Spring Madness. Location: Aurora Medical Center, 3500 Aurora Dr, Summit, WI 53066. Contact: Peggy Morrissey, N1417 County Road P, Rubicon, WI 53078, 262-443-0306, pegmorrissey@gmail.com. 6 CE credits, pending approval by AST.
State Assembly Annual Business Meetings

Members interested in the election of officers & the business issues of their state assembly should ensure their attendance at the following meetings.

<table>
<thead>
<tr>
<th>State</th>
<th>Location</th>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>ALABAMA</td>
<td>Montgomery</td>
<td>February 27, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>ALASKA</td>
<td>Anchorage</td>
<td>February 20, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>CONNECTICUT</td>
<td>Bridgeport</td>
<td>March 19, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>FLORIDA</td>
<td>Jacksonville</td>
<td>March 12, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>GEORGIA</td>
<td>Atlanta</td>
<td>March 12, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>ILLINOIS</td>
<td>Peoria</td>
<td>March 5, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>KANSAS</td>
<td>Wichita</td>
<td>March 5, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>LOUISIANA</td>
<td>Baton Rouge</td>
<td>April 2, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>MAINE</td>
<td>South Portland</td>
<td>April 2, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>NEVADA</td>
<td>Las Vegas</td>
<td>March 5, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>OREGON</td>
<td>Springfield</td>
<td>March 5-6, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>PENNSYLVANIA</td>
<td>Harrisburg</td>
<td>March 19, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>UTAH</td>
<td>Murray</td>
<td>March 19, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>TEXAS</td>
<td>Ft Worth</td>
<td>March 5-6, 2016</td>
<td>Annual meeting &amp; elections</td>
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<tr>
<td>SOUTH DAKOTA</td>
<td>Watertown</td>
<td>April 16, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>TENNESSEE</td>
<td>Chattanooga</td>
<td>March 4-6, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
<tr>
<td>VIRGINIA</td>
<td>Richmond</td>
<td>March 19, 2016</td>
<td>Annual meeting &amp; elections</td>
</tr>
</tbody>
</table>

Members interested in the election of officers & the business issues of their state assembly should ensure their attendance at the following meetings.

For assistance, call 800-637-7433, ext 2516 or email stateassembly@ast.org

▲ ‘Approved’ indicates a continuing education program that has been approved by AST for CE credit.
▲ ‘Accredited’ indicates a formal, college-based surgical technology or surgical assisting program that has been accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

Future Program Approvals: A Date Request Form must be submitted to AST 120 days prior to the workshop date. For complete information on all required forms, refer to the AST Policies for the Approval of State Assembly Continuing Education Programs and the Application for Approval of Continuing Education Programs State Assembly (application is due at least 10 business days before the workshop date) at www.ast.org, under State Assemblies tab, submenu Meeting Forms.

The completed Date Request Form must be submitted before the first of the current month to be published in the next month's issue of *The Surgical Technologist*. A confirmation email as receipt received will be sent upon approval.

Active state assemblies are the future of the Association of Surgical Technologists' strength and success. The Association of Surgical Technologists gives special recognition to those state assemblies that demonstrate outstanding leadership within their states.

• To recognize excellence in leadership and member development, communication, education and community relations
• To encourage quality state management
• To recognize with distinction and visibility that efforts and results of meaningful activities build a strong state
• To benchmark standards

Entry deadline: January 31, 2016, for the January 1–December 31, 2015, reporting year.
The Accreditation Review Council on Education in Surgical Technology and Surgical Assisting (ARC STSA) is pleased to announce the launch of our 2016 Scholarship Program in service to the Surgical Technology and Surgical Assisting student and educator communities.

Annually, since 2005, the ARC STSA Board of Directors has awarded multiple scholarships of up to $1,000 in at least two separate categories, Student Scholarship and Educator Scholarship. In 2016, the ARC STSA will award a total of up to $5,000 in combined scholarships.

All eligible applicants are strongly encouraged to apply before the February 26th deadline. For eligibility requirements and to apply visit arcstsa.org today!

Scholarship recipients will be announced at the 2016 AST National Conference in San Diego, CA and will be posted on our website, arcsta.org, by July 8, 2016.

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With a tradition of care that spans more than 100 years, the pioneering spirit is still alive and well at Centura Health. As a fully-integrated health system with 15 hospitals throughout Colorado, we’ll help you discover your ideal job and put down roots in great places to live like the Denver Metro Area, Colorado Springs, Pueblo and Durango.

Many of these full-time positions come with a generous sign-on incentive (up to $5k depending on location) and relocation assistance – ask at time of application!

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careers.centura.org

Denver Metro Area
HaileyMeseraull@centura.org
720-528-0635

Southern Colorado
KristiTosh@centura.org
719-776-4315

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EARN UP TO 18 CONTINUING EDUCATION CREDITS AT THE
ASA 2016 SPRING MEETING
EMBASSY SUITES LAS VEGAS | 3600 PARADISE ROAD

ASA MEETING AGENDA

FRIDAY, MARCH 4
8 AM–5 PM
Choose one of three off-site workshops. Transportation provided. Each workshop offers 8 CE credits. Registration is limited. Detailed descriptions available online at www.surgicalassistant.org.
Endovein Harvesting
IV Therapy
Wound Management
6–7 PM
KEYNOTE ADDRESS
Professionalism and Social Networking in the Medical Community
(applicable as Ethics credit)
Luke Newton, MD
7–8 PM
Reception
Sponsored by Meridian Institute of Surgical Assisting

SATURDAY, MARCH 5
7:45–8 AM
Welcome
Kathy Duffy, CSFA, CSA, ASA President

☐ Total Ankle Arthroplasty
Timothy Watts
☐ Evidence-based Laparoscopic Entry and Closure Techniques
Luke Newton, MD

8–8:50 AM

☐ Tell Me Something I Don’t Know
ASA Board/Participants
☐ Foley Catheter for Perioperative Patient/Skills Lab
Luke Newton, MD

Midmorning Break
(sponsored by ARCSTSA)

9–10:50 AM
☐ Total Ankle Arthroplasty
Timothy Watts
☐ Evidence-based Laparoscopic Entry and Closure Techniques
Luke Newton, MD

☐ Tell Me Something I Don’t Know
ASA Board/Participants
☐ Foley Catheter for Perioperative Patient/Skills Lab
Luke Newton, MD

10:50 AM
NOON Lunch
(sponsored by NBSTSA)

11 AM–NOON
☐ Critical Airway Management
Richard Byrd, MD
☐ Robotic Advancements in Urology
Jayram Krishnan, DO

11 AM–NOON
☐ Introduction to Medical Billing
Rebeca Paley, BS
☐ Patient Characteristics That Increase Complication Risk
Solomon Paley, MD

1–1:50 PM
☐ Minimally Invasive Surgery: Mitral Valve
Michael Morrison, CSFA
☐ Optimal Device Performance and Improving Surgical Outcomes
George Tuchsen, MD

Afternoon Break
(sponsored by NBSTSA)

2–2:50 PM
☐ Preparing for Infection in Total Shoulder Arthroplasty
Richard Byrd, MD
☐ Robotic Advancements in Urology
Jayram Krishnan, DO

3–3:50 PM
☐ Endovein Harvesting
Linda McCarthy
☐ Critical Airway Management
Richard Byrd, MD

4–4:50 PM
☐ Patient Characteristics That Increase Complication Risk
Solomon Paley, MD
☐ Robotic Advancements in Urology
Jayram Krishnan, DO

5–5:50 PM
☐ Making a Difference Through Medical Missions
Faith in Practice
Linda McCarthy

5:50–6 PM
Closing
Kathy Duffy, CSFA, CSA

MARCH 4–5, 2016

ASA LAS VEGAS MEETING FEES
Includes Friday reception, keynote presentation, Saturday education sessions, breaks and lunch.
Mail to: ASA, 6 West Dry Creek Circle, Suite 200, Littleton, CO 80120, 303–694–9130,
www.surgicalassistant.org

Date
Member/Cert No.
Name (please print)
Circle title:
CST
CSFA
CSA
SA-C
Other
Address
City
State
Zip
Home phone
Work phone
Email

Credit card billing address (if same as above, leave blank)
City
State
Zip

2016 ASA Las Vegas Meeting
ASA Member: $275
ASA Student* Member: $175
Nonmember: $300

Friday Workshops
Choose only one; must be registered for ASA meeting.
Endovein Harvesting
IV Therapy
Wound Management

*Currently enrolled in CAHPS-accredited surgical assisting program

Money Order/check enclosed for $  (No purchase orders accepted)
VISA
MC
AmEx

Name on Card
Expiration Date
Total amount charged
Signature

Attendance is limited to 125. Confirmation will be mailed upon registration. Onsite registration will be available on a space-available basis. All cancellations must be received in writing by February 20, 2016. Accommodations: Las Vegas Embassy Suites, 3600 Paradise Road, Las Vegas, NV 89169.702-893-8000. Deadline for reservations is February 2, 2016. Rates: $115/night/king; $129/night double/Room block is limited.