SACRAL LATERAL BRANCH RADIOFREQUENCY NEUROTOMY

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These safety practices have been developed to highlight the important elements in the safe performance of interventional pain procedures. Adherence to these practices will help decrease the risk of preventable complications. For additional information about the indications and technical aspects that yield improved treatment outcomes, refer to the *IPSIS Technical Manual and Atlas of Interventional Pain and Spine Procedures*.

/// PERSONNEL

- Only physicians trained in sacral lateral branch radiofrequency neurotomy (SLBRFN) should perform this procedure.
- Appropriately trained personnel are needed to operate the fluoroscopy unit or assist the physician.

/// CONTRAINDICATIONS

ABSOLUTE

- An active systemic infection or a localized infection within the procedural field
- Uncooperative patient or inability to obtain informed consent
- Allergy to medication(s) that cannot safely be omitted or mitigated by pre-treatment
- Hypotensive emergency/urgency
- Uncontrolled blood pressure
- Pregnancy
- Anatomical derangements that compromise the safe and successful conduct of the procedure

RELATIVE

- Concurrent treatment with anticoagulants/antiplatelets (AC/AP) constitutes a potential relative contraindication for cervical MBRFN.
- Asymptomatic blood pressure >180/110
- Uncorrected coagulopathy
- Spinal hardware is not an absolute contraindication to SLBRFN, but its presence may complicate electrode placement. The risk of heating spinal hardware applies as well.
- Physicians should consider the possibility of and take all precautions to avoid skin burns in patients with minimal soft tissue over the surgical hardware. Physicians should confirm appropriate probe depth in a lateral view immediately before all lesions.

- Caution is advised in patients who have cardiac pacemakers and defibrillators. If a decision is made to proceed with RFN in these patients, physicians should educate the patient on the potential hazards and risks of RFN in the setting of a pacemaker or defibrillator and consider the following recommendations:
  - Ensure the patient is followed by a cardiologist/electrophysiologist and obtain prior approval from the provider, which should be documented in the patient's medical record.
  - If recommended by a cardiologist or electrophysiologist:
    - Have on-site support for interrogation of the cardiac device during the procedure if reprogramming is required.
    - Place a magnet over the device during the procedure to prevent triggering the device by radiofrequency energy.
    - Remove the magnet or use an external defibrillator or pacing electrodes in case of cardiac arrhythmias during the RFN procedure.
    - Discussion with the patient's cardiologist is recommended to ensure that safety is optimized, as technology associated with cardiac devices changes rapidly.
  - Use bipolar RF lesioning.
- Other implantable devices, such as spinal cord and deep brain stimulators, should be turned off during the procedure. The stimulator should be restarted after the procedure to ensure proper functioning. The grounding pad should be placed so that the electrical current's path is as far as possible from the device. The procedure should be abandoned if the risk of stimulator electrode-heating during the neurotomy cannot be eliminated.

/// ANTITHROMBOTICS AND BLEEDING DISORDERS

- Consistent with the IPSIS *Technical Manual and Atlas of Interventional Pain and Spine Procedures*, the bleeding risk is classified as low for SLBRFN. The general consensus is that anticoagulant and antiplatelet therapy do not need to be discontinued before these procedures.

/// PROCEDURAL SEDATION

- Sedation is not intrinsically necessary for SLBRFN, but if employed in unique circumstances (*e.g.*, movement disorder, cases of extreme anxiety, previous vasovagal response), the patient should remain able to communicate pain or other adverse sensations or events. Deep sedation and general anesthesia are contraindicated.
- The decision to use sedation for an appropriate indication should be made on a case-by-case basis. Patients should be advised during informed consent that procedural sedation is not necessary but elective.
- If the physician performing the procedure decides that sedation is indicated, a separate healthcare provider must administer the medications and monitor the patient.
- Resuscitation drugs, appropriate monitoring equipment, and oxygen must be available if sedation is utilized.

SAFE, ASEPTIC PRACTICES

- Strict aseptic technique should always be applied to the facility, patient, physician, assisting personnel, injectate/syringe, and other procedural materials. Examples include, but are not limited to:
  - Skin overlying the target region should be prepared for an aseptic procedure, preferably using chlorhexidine with alcohol. The area should then be draped to create a sterile field for the physician's hands and the electrodes and cables that will be brought into the field.
  - A face mask and sterile gloves must be worn during the procedure.
  - Sterile single-use syringes and needles are required, and single-dose vials should be utilized when available.
  - The acquisition, storage, and utilization of medications should adhere to relevant regulatory guidelines.
  - Single-use or reusable probes are appropriate; reusable probes are appropriate if proper sterilization techniques are employed between patients and procedures.

IMAGING

- The use of image guidance is critical to ensuring appropriate lesioning device placement relative to the bony sacral target.
- The fluoroscopic technique should follow the ALARA (As Low As Reasonably Achievable) principles to minimize X-ray exposure for the patient and the healthcare team.
- Based on true AP fluoroscopy, lesioning device placement should be 10mm lateral to the visible dorsal foramen. A device placed deep within the sacral foramen risks sacral nerve injury.
- True lateral imaging should be used to verify the depth of the lesioning device during placement and before the initiation of destructive thermal lesioning.
- Obtain image(s) showing the cannula's final position in at least two views: an AP view that maximizes the crispness of the lateral edge of the sacral foramen at a particular level and a true lateral view.
- A neurotomy should not be initiated if imaging does not allow visualization of the bony landmarks and location of the electrode tip. In the lateral view, the lesioning device tip should not extend anterior to the posterior surface of the sacrum.

NEUROTOMY

- A dispersive pad should completely adhere to the skin with the long axis of the pad facing the active RF electrode to minimize the risk of a dispersive pad skin burn. The grounding pad should be placed to ensure that pre-existing implanted hardware and/or electronic devices are not in a pathway from the electrode to the grounding pad.
- Sensory and motor testing is not required for safety or efficacy if appropriate care is taken in electrode placement.
- Impedance and temperature at the electrode tip should be monitored. Lesioning above 90°C is not recommended due to the risk of cavitation resulting in inconsistent lesion sizes and shapes. The procedure should be halted if the patient complains of any pain or other sensation indicative of nerve root or ventral ramus involvement during temperature escalation or neurotomy. The generator should be turned off, and the causes should be evaluated and corrected. If such symptoms persist, the procedure should be aborted.

LUMBAR MEDIAL BRANCH CONVENTIONAL RADIOFREQUENCY NEUROTOMY

- For RFN of the L5 dorsal ramus, the electrode should avoid the ventral quarter of the neck of the superior articular process to avoid unnecessarily lesioning the lateral or intermediate branches. Further advancement beyond this point can directly damage the ventral ramus or spinal nerve.
- Regardless of the technique, the electrode should not be permitted to enter the foramen to prevent spinal nerve injury.

POST-PROCEDURE MONITORING/FOLLOW-UP

- Patients should be monitored for an appropriate time following the procedure, depending upon the nature of the intervention and the agents utilized.
- Provide detailed oral and written discharge instructions to patients that outline the following:
  - restrictions and recommendations for the immediate post-injection period
  - potential common side effects that may occur immediately post-injection and in the days following the procedure (*e.g.*, pain at the injection site)
  - symptoms that merit immediate medical attention
  - timing for resumption of usual medications and anticoagulants if discontinued for the procedure
- Ensure patients have a follow-up plan.

SOURCES

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DISCLOSURES

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DISCLAIMER

While these Safety Practices are intended to identify elements critical to the safe performance of interventional spine procedures, they are not intended to be inclusive of all proper methods relevant to the safe performance of spine procedures or exclusive of other methods of care reasonably utilized to obtain the same results. Nothing contained in these documents is intended to be used as a substitute for the care and knowledge of the individual clinician. They are guidelines based on evidence-informed expert consensus. IPSIS makes no representation and assumes no responsibility for the accuracy of the information contained or available through this website, and such information is subject to change without notice. Given the individual patient's clinical circumstances and preferences, the clinician's independent medical judgment should always determine patient care and treatment. Practitioners are advised to consider management options in the context of their training and background and institutional capabilities when selecting recommended treatment options. IPSIS is not responsible, nor does it assume any legal liability or responsibility for the accuracy, completeness, clinical efficacy, or value of any such information or apparatus, product, or process described or referenced through this website or the information contained therein.