PULSE GENERATOR REPLACEMENT pdf

1: Generator, Pulse [Z] for Honda Lawn Equipment | eReplacement Parts

Pulse generator (PG) replacement procedures may be required for a variety of reasons and, in general, are considered to be fairly routine. However, the success of these procedures is largely dependent on.

Pacemakers and implantable cardioverter defibrillators ICDs are heart devices. They are surgically placed in people. Pacemakers are used to treat slow heart rhythms. ICDs stop dangerous, fast heart rhythms. These devices have two main parts: The pulse generator is a small metal box. It contains electric circuits and a battery. During the first placement of your heart device, your doctor put this generator under your skin or the muscles of your chest wall. In rare cases, these are placed in a pocket in your abdomen. Normally, these generators are powered by lithium batteries. They work for 5 to 10 years before they need to be replaced. To replace the pulse generator, you will need an implantable device replacement procedure. The leads are wires that run between the pulse generator and your heart. These leads can give a burst of energy. This energy can cause your heart to beat more quickly in a pacemaker or it can stop fast heart rhythms in an ICD. To do this, the leads must make contact with your heart. Most leads travel through a vein to attach to the right side of your heart. They are often attached to the heart with a small screw or hook. Replacing the pulse generator is a simple surgery. Your old generator will be disconnected from your leads. Then it will be taken out. Then your surgeon will put a new generator in the same pocket and connect it to the leads that are in place. At that point, your new ICD or pacemaker can work just as before. In rare cases, you may need to have the leads removed along with or instead of generator replacement. This is a more complex procedure. Why might I need an implantable device replacement procedure? Most generators need to be replaced 5 to 15 years after they are inserted. This is because their batteries run out over time. Your healthcare provider can check the battery and functioning of your device. Most of the time, these devices give plenty of warning that they are nearing the end of their battery life. You often have a few months to schedule your replacement procedure. Sometimes, you need to replace your generator before the battery life ends. This may happen if: Your generator starts to malfunction or stops working. You have an infection at the site of the generator, and you need more than antibiotics to clear it up. The pacemaker can keep your heart from beating too slowly. ICDs can stop the kind of dangerous heart rhythms that can lead to sudden death. You may need an ICD if you had a sudden cardiac arrest, heart failure, or heart rhythm problems. What are the risks of an implantable device replacement procedure? This procedure if very safe, but it comes with some rare risks. Infection Heavy bleeding Allergic reaction to anesthesia There is also a small risk that you will also need your leads replaced. This requires a more complex surgery. In most cases, your surgeon will know ahead of time if you will need this. Your risks may differ depending on your age, health issues, and where your generator was originally placed. Ask your healthcare provider about your outlook before your surgery. How do I get ready for an implantable device replacement procedure? Your healthcare provider may tell you not to eat or drink anything before midnight of the day of your procedure. Arrange for someone to drive you home after the procedure. Your healthcare provider may do some tests before your procedure. These may include an electrocardiogram ECG. This test is done to check your heart rhythm. Or you may need an echocardiogram. This test checks how blood is moving through your heart. Just before the procedure, someone may shave your skin above the area where you will have the incision. Someone will also start an IV intravenous line. This is done so you can get medicine during the surgery. What happens during an implantable device replacement procedure? The procedure may take a few hours. In general you can expect the following: Medical staff will start a medicine through an IV line. This will make you feel sleepy and relaxed. Medical staff will closely watch your heart rate, blood pressure, and other vital signs. After cleaning the area, the healthcare provider injects medicine to numb the skin over your generator. This will keep you from feeling pain as the device is replaced. The surgeon makes a cut into the pocket of skin and tissue surrounding the generator. This will be just below your collarbone or somewhere in the soft tissue of your abdomen. This cut will not enter your chest or belly abdominal cavity. The surgeon disconnects your old generator from its leads. Then he or she takes it out of your body. The surgeon puts your new generator in the same pocket where the old generator was. He or she attaches it to your old leads. Medical

staff will check that the new device is signaling the right way. The surgeon will close up the pocket and the small incision in your skin. You will need bandages. What happens after an implantable device replacement procedure? Your healthcare provider will monitor you after the procedure. You may not remember much of the procedure. In most cases, you can go home after a couple of hours. Try to take it easy the rest of the day. Make sure someone is around to help you. You can eat your normal diet as soon as you are able to. You may have some minor pain after the procedure. Ask your healthcare provider if you can take over-the-counter OTC medicines. Your healthcare provider will tell you how the procedure went. You will need to care for your wound. You may also need to take antibiotics for a few days after the procedure. Tell your healthcare provider right away if you have heavy bleeding from your incision, a fever, or other severe symptoms. You will likely have a checkup a week or so after your surgery. Your healthcare provider will monitor your ICD or pacemaker regularly, just like he or she did before the procedure. Next steps Before you agree to the test or the procedure make sure you know:

PULSE GENERATOR REPLACEMENT pdf

2: Pacing Output Failure After Electrocautery During Pulse Generator Replacement

REPLACE: Implantable Cardiac Pulse Generator Replacement Registry (REPLACE) The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government.

We report two cases of device malfunction with loss of pacing output during routine device generator replacement surgery after using electrocautery. These devices were nearing or had just reached the elective replacement indicator ERI. Most current devices are relatively robust during electrocautery, although manufacturers warn of potential damage to the device. Current monitoring strategies for device pacemaker and defibrillator battery depletion include ERI and end of life EOL. ERI results in predictable changes in device function, and allows programming of devices that can decrease the risks associated with electrocautery. However, those programming changes were not protective in the cases described. More detailed information regarding device-specific risks with electrocautery, including the specific testing performed, would be useful. Electrocautery should be avoided in pacemaker-dependent patients with generators subject to output circuit failure, such as those described here. Rottman has reported he has received support for the Cardiac Arrhythmia Fellowship program from Medtronic Inc. Jude Medical, Boston Scientific Inc. Manuscript received April 22, , final version accepted May 21, All devices are intended to maintain support for basic pacemaker function when the battery voltage approaches ERI. In devices from most manufacturers, ERI disables rate response and some diagnostic features, and the mode of pacing may change e. With a further decrease in voltage to the end of life EOL threshold, correct pacemaker function cannot be reliably supported. The expectation is that ERI provides a period of normal and safe pacemaker function, providing a window for a typical generator replacement procedure. Manufacturers generically describe the potential damage to the pulse generator Table 1. However, most clinical experience suggests that surgical electrocautery causes little or no damage to current device systems. A recent evaluation showed only rare cases of application of unipolar electrocautery in close proximity of the device causing electromagnetic interference EMI , resulting in inappropriate sensing and no permanent damage. Management of electrocautery with implantable cardiac devices We report two cases of loss of pacemaker output during an elective pulse generator replacement with use of electrocautery when the battery voltage was either greater than or at ERI, but not in EOL. Both of these cases occurred with St. These cases are discussed in the context of electrocautery interaction with implanted devices. Case 1 A year-old male with history of hypertension, chronic obstructive pulmonary disease, sick sinus syndrome, complete heart block, and non-ischemic cardiomyopathy with left bundle branch block underwent a cardiac resynchronization therapy defibrillator device CRT-D implantation. His underlying rhythm was sinus bradycardia with complete heart block. All the leads had stable impedances, and pacing and sensing thresholds. He was electively admitted for generator replacement 2 weeks later. Battery voltage at this time remained within the ERI window. All leads were programmed to bipolar pacing. Loss of pacing output with electrocautery use; Panel C: Initiation of temporary pacing with using unipolar connection with the header set screw. The prior incision was sharply opened and the device was freed from adhesions in the capsule using electrocautery. Electrocautery was stopped prior to reaching the generator. When the generator was removed from the pocket, pacing output was suddenly lost with loss of pacing Figure 1b. Pacing output did not resume when the pacemaker generator was replaced in the pocket. Temporary pacing was emergently instituted using a unipolar connection with the header set screw Figure 1c ; the positive alligator clamp was attached to the surgical wound retractor, and the negative clamp was attached to a hex wrench that made contact with the set screw to the distal right ventricular RV electrode via the header grommet. The old generator was disconnected from the leads, and the lead analyzer was used to provide bridging pacemaker support. The leads were functioning correctly and were transferred to the new generator. The new generator and leads were returned to the pocket, and the function of new generator and leads were satisfactory and consistent with the previously measured values. The device was not noted to be in noise reversion mode, and no error parameters were identified. It was returned to the manufacturer for further evaluation, particularly because of the unexplained pacemaker

output failure. No additional analysis has been reported at this time. Case 2 A year-old male with history of hypertension, coronary artery disease, and complete heart block underwent a dual-chamber pacemaker implantation with a St. Jude Model ; RV lead, St. Jude Model in January In November , the device was near ERI with a battery voltage of 2. All pacing leads demonstrated stable pacing and sensing thresholds and pacing impedances. While the device was being freed from the adhesions in the pocket using electrocautery , there was sudden decrease in heart rate, to a pacemaker delivered output rate of 30bpm Figure 2b , corresponding to half of the previously programmed rate. The device was quickly removed from the pocket and the ventricular lead was disconnected from header and connected to the lead analyzer with restoration of ventricular pacing. The atrial lead was then disconnected from the old generator. Both leads were found to be functioning correctly and were transferred to the new generator. The new generator and leads were returned to the pocket, and the function of the new generator and leads were verified and were stable. The old generator was returned to the manufacturer for evaluation, with note made of the pacemaker output failure of a device that had not yet reached ERI or EOL. Sudden decrease in pacing output rate and heart rate to 30 bpm with electrocautery. Pacing output remained inhibited for several seconds after the electrocautery was discontinued. Discussion Predictable pacemaker behavior is necessary for appropriate management decisions and this is particularly important in pacemaker-dependent patients. Electrocautery is commonly used during pulse generator replacement. Although no universal guidelines or recommendations currently exist, most manufacturers and standard texts suggest predictable device pacemaker, defibrillator behavior after voltage decline to ERI, and recommend elective pulse generator replacement after the battery voltage reaches ERI. Multiple manufacturer manuals vaguely caution that electrocautery can result in abnormal device behaviors such as reprogramming, inhibition, or fall back to magnet mode. Furthermore, performing the replacement procedure when the devices are still in ERI status allows the specified programming changes, and is usually thought to provide additional protection. However, these cases clearly reflect device-specific differences in the potential for and the consequences of cautery-induced device malfunction. We described two cases of pacing output failure. One was a pacemaker and the other one was a defibrillator with different circuit platform by design. Both procedures were elective generator replacements as the device battery voltage has reached or was approaching ERI. As a routine practice in our laboratory during generator replacements, electrocautery was used during both these procedures. Standard precautions were taken, such as reprogramming to asynchronous mode for both devices, and tachycardia therapies were turned off for the defibrillator prior to cautery use. During both procedures, there was sudden pacing output failure requiring immediate measures as described in the cases to restore ventricular pacing. The device platforms are fundamentally different between these devices, but the analog output circuit design may be similar. ICDs differ importantly from pacemakers in not reverting to unipolar mode under noise conditions; thus, in an ICD the failure to pace after electrical noise generally is not due to an incomplete shoulder return circuit. There are multiple means by which cautery can interfere with pacemaker function. Oversensing of the cautery electrical activity can inhibit paced output, but this inhibition should stop with the cessation of electrocautery. Devices programmed to asynchronous mode should be immune to this inhibition. Cautery can trigger noise reversion, and this may reprogram pacemaker output polarity to unipolar mode. When a unipolar device is removed from the pocket, the current return path for pacing is interrupted, and effective pacing can be lost. However, recreating this return path should restore pacing, and ICD systems do not typically change RV pace polarity. This mechanism therefore cannot explain the output changes noted in these two cases, and noise reversion was not observed on device interrogation. Indirect coupling of radiofrequency energy, including cautery, to the leads can result in a changed leadâ€”tissue interface, but the absence of any change in lead parameters when attached to the new generator argues against this mechanism here. The likely mechanism in both of these cases was direct damage to the output circuit with complete Case 1 or partial Case 2 loss of effective output. The only effective response in this circumstance is to provide an alternative source of pacing energy prior to transfer of the leads to an unaffected generator. This is similar to a report from in which output failure in a Medtronic pulse generator after electrocautery is detailed. The temporal juxtaposition of these two cases suggests that it may be less rare than anticipated, and suggests that shared output circuit design features may predispose to this problem. The

findings observed cannot be attributed to the unreliable device function that may be expected after transition from ERI to EOL. Jude Medical generator families. It would be beneficial for manufacturers to more accurately describe the range of behaviors that may be expected with their specific devices in response to cautery, the specific testing that has been performed, and the frequency and predisposing factors to this behavior. Conclusion Catastrophic output failure in response to electrocautery can be observed with devices currently requiring generator replacement, and is not necessarily prevented by performing the replacement procedure during early ERI status or by programming to asynchronous pacing mode. Certain devices may be especially prone to this mode of failure, and cautery should be avoided during replacement procedures with devices where this mode of failure has been reported. More complete disclosure of electrocautery interaction and testing would be desirable for optimizing procedural aspects of cardiac rhythm device management. Effects of surgical and endoscopic electrocautery on modern-day permanent pacemaker and implantable cardioverter-defibrillator systems. Heart Rhythm ; 4: Practice advisory for the perioperative management of patients with cardiac rhythm management devices: Zipes DP, Jalife J. From Cell to Bedside. Biotronik Evia Technical Manual, Boston Scientific Altrua pacemaker System Guide, Boston Scientific Contak defibrillator System Guide, Sorin Paradym defibrillator Implant Manual, Ann Thorac Surg ; Is electrocautery still a clinically significant problem with contemporary technology? Electrocautery-induced pacemaker malfunction during surgery. Can J Anaesth ; Effects of Electrocautery on St.

3: Pulse generator replacement - Oxford Medicine

Pulse generator replacement Provider removes an ICD pulse generator and replaces it with a pacemaker pulse generator using the existing leads. Would this be , , or as the end result is the patient has a pacemaker or would this be something else?

4: pulse generator replacement - Hyundai Forums : Hyundai Forum

Due to the many variances of handy pulse generator pendants, switches, cables and configurations repairing a manual pulse generator is not always the best option or easy. We offer the following parts for repairs.

5: Implantable Device Replacement Procedure | Johns Hopkins Medicine Health Library

The pulse generator produces rectangular pulses in the generator circuits. A wrench set and a screwdriver are necessary for making the replacement. Please be sure to refer to the specific manual and diagrams for repair instructions.

6: Powermate Generator Parts | Great Selection | Great Prices | www.enganchecubano.com

Pulse Generator Replacement The establishment of effective pacemaker follow-up programs is considered a necessity by those interested in cardiac pacing in order to.

7: # Replacement Battery Ear Pulse Generator

We report two cases of loss of pacemaker output during an elective pulse generator replacement with use of electrocautery when the battery voltage was either greater than or at ERI, but not in EOL.

PULSE GENERATOR REPLACEMENT pdf

Composing Knowledge ix visual exercises State of Montana, State Economic Opportunity Office, report on examination Resourcefulness as the art of succeeding Marek Celinski and Lyle Allen-III Chapter 11 Eat Stop Eat 20 Cbse class 10 science practical book Chris Long, Philadelphia Phillies Elementary Wrought Iron Living with a hyperactive child The International Covenant on Civil and Political Rights and United Kingdom Law Dr balvir singh dil books in Loneliness and deliverance Country statement, India Architectural treatise in the Italian Renaissance Simeon panda mass gain extreme Make the most of now : bodies, mayflies and the fear of representation Maaike Bleeker The War in Bengal Intermediate Accounting Volume Two Death of Gurdjieff in the Foothills of Georgia Pink Lemonade Sky Good Night, Gorilla (Mathematics Focus) Ibps clerk main exam study material The Children Of The Night Management plan Quartzville Creek Snow Bound, Among the Hills, Songs of Labor and Other Poems David and Goliath (Happy Day Books Bible Stories, Happy Day Books Bible Stories) Scattering from Polymers Ideology of the future Mri basic principles and applications 5th edition The nature of human altruism Source uments in accounting Nursing informatics and evidence-based practice WHAT DO YOU KNOW? VOLUME 2 (And Not So Common Knowledge) Cambridge Flyers 4 Students Book (Cambridge Young Learners English Tests) Android er to pc Saratoga, by E. H. Walworth The roles of educational technology in learning The Japanese tax treaty (T. Doc. 108-14 and the Sri Lanka tax protocol (T. Doc. 108-9) Kant and Hegel, or the ambiguity of origins Death of Lincoln (p. 236-245) Theories of scientific method