Implantable pulse generator

Spinal cord stimulation is a well-established and effective therapy in the treatment of pain. Proper patient selection and accurate lead placement are paramount to its success. Placement is a multifaceted process requiring proper paddle placement, a well-thought-out generator placement, and appropriate means to limit complications and enhance success.

Rechargeable implantable pulse generator

Complications

Infection

Internal pulse generator (IPG) replacement is considered a relatively minor surgery but exposes the deep brain stimulation system to the risk of infectious and mechanical adverse events. We retrospectively reviewed complications associated with IPG replacement surgery in our center and reviewed the most relevant publications on the issue.

A retrospective analysis of all the IPG replacements performed in our center from January 2003 until March 2018 was performed. A logistic regression model was used to analyze the risk factors associated with IPG infections at our center.

A total of 171 IPG replacements in 93 patients were analyzed. The overall rate of replacement complications was 8.8%, whereas the rate of infection was 5.8%. IPG removal was required in 8 out of 10 infected cases. An increased risk of infection was found in patients with subcutaneous thoracic placement of the IPG (OR 5.3, p = 0.016). The most commonly isolated germ was Staphylococcus coagulase negative (60%). We found a non-significant trend towards increased risk of infection in patients with more than 3 replacements (p = 0.07).

Infection is the most frequent complication related to IPG replacement. Staphylococcus coagulase negative is the most commonly isolated bacteria causing the infection. According to our results, the subcutaneous thoracic placement represents a greater risk of infection compared to subcutaneous abdominal placement [1].

Foreign body granuloma

Two cases of granuloma that occurred around an implantable pulse generator (IPG) for deep brain stimulation. Both cases showed no signs of infection and disappeared after moving the IPG and removing the granulation. If a noninfectious mass is formed, the relocation of IPG may improve it [2].

1)
Narváez-Martínez Y, Roldán Ramos P, Hoyos JA, Culebras D, Compta Y, Cámara A, Muñoz E, Martí MJ, Valldeoriola F, Rumià J. Single-Center Complication Analysis Associated with Surgical Replacement of Implantable Pulse Generators in Deep Brain Stimulation. Stereotact Funct Neurosurg. 2019 Jul 5:1-5. doi: 10.1159/000500210. [Epub ahead of print] PubMed PMID: 31280257.
2)

Asahi T, Ikeda K, Yamamoto J, Yamamoto N, Sato S, Tsubono H, Muro Y. Foreign body granuloma around implantable pulse generator for deep brain stimulation: Two case reports. Parkinsonism Relat Disord. 2021 May 18;88:60-61. doi: 10.1016/j.parkreldis.2021.05.009. Epub ahead of print. PMID: 34139434.