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Shaw scalpel for breast mastectomy in a pacemaker-implanted patient

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To the editor: In patients with pacemakers, the use of electric scalpels carries the risk of induction of pacemaker malfunction. Electrocautery with an electric scalpel interferes with the sensing of the cardiac rhythm by a pacemaker. To avoid this risk associated with electrocautery, Shaw scalpels can be used, as their functioning is independent of electricity. We present a case report of the successful use of a Shaw scalpel for breast mastectomy in a patient with an implanted pacemaker.

A 67-year-old woman was scheduled for right breast mastectomy to treat breast cancer. Her past medical history included left breast mastectomy for breast cancer and implantation of a pacemaker for complete atrioventricular (A-V) block. Preoperative echocardiographic examination showed aortic regurgitation (grade II). An implanted pacemaker with DDD mode was present in the upper right side of the chest. The planned surgical site was approximately 2 cm from the pacemaker.

Anesthesia was induced and maintained using nitrous oxide, oxygen, and isoflurane. Surgical time and anesthesia time were 195 and 280 min, respectively. The surgeon used the Shaw scalpel during the operation. The pacemaker mode remained unchanged, and the patient's heart rate remained stable at around 60 bpm. The operation was safely performed without inducing pacemaker malfunction.

Electrocautery with an electric scalpel produces extraneous noise for the pacemaker and causes interference in the synchronization of the pacemaker with the patients' heartbeat [1]. Furthermore, excessive electrocautery sometimes destroys the inner circuit of the pacemaker [1]. There are case reports in the literature of cauterization of the myocardium and ventricular fibrillation resulting from electrocautery impulses transmitted through a pacemaker wire [2]. Therefore, the Shaw scalpel is recommended for surgeries in pacemaker-implanted patients [2,3].

The Shaw scalpel cuts and coagulates tissues by raising the temperature of the tissue. The instrument provides continuous sensing of blade temperature and maintains the temperature within narrow limits. The range of heat provided is 100°–300°C in 10° increments as selected by the user. A process of thermosealing or thermocoagulation of vessels obtains hemostasis during incision with proper temperature settings for different types of tissue. This cutting with simultaneous sealing of the blood vessels is a great advantage of the Shaw scalpel [4].

We demonstrated the efficacy of the use of the Shaw scalpel in a pacemaker-implanted patient for mastectomy. Not only the surgeon but also anesthesiologists should be familiar with these advantages of the Shaw scalpel.

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