

Sealing devices on a porcine model- thermography analysis. Which device would be the gentlest with surrounding tissues, with possible implications in preserving the neurovascular bundles in laparoscopic radical prostatectomy?

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**Introduction & Objectives:** Even if an adequate hemostasis is targeted for the perioperative management of our patients, when hemostatic means are overused, the functional results may suffer. We compared the thermal damage made by different sealing devices that were used as hemostatic means on the diaphragm and urinary bladder of a porcine model. The objective was to discover which is the gentlest sealing device (offering better tissue preservation by minimizing thermal cell lysis and tissue destruction) that should be utilized as a hemostatic tool during the laparoscopic surgical treatment of prostatic adenocarcinoma, providing the best functional outcomes.

**Materials & Methods:** The experiment was performed using the diaphragm muscle and the urinary bladder harvested from one pig weighing 30 Kg that was euthanized respecting the ethical guidelines. On the harvested organs we utilized different sealing devices that use either radio frequency diathermy, ultrasonic energy or a combination of both, with one coagulation cycle for the automatic hemostasis. Infrared thermography was used to track their thermal effect. We calculated the mean value of the extent of collateral tissue with irreversible thermal damage caused by each type of device, when performing the maneuvers of hemostasis. The results were compared.

**Results:** The thermography analysis showed that ultrasound sealing devices were the gentlest ones with surrounding tissues, when used on the diaphragm and the urinary bladder of our porcine model. They offered the minimum collateral spread of a temperature that would irreversibly destroy it.

**Conclusions:** The studied sealing devices offered different levels of temperature spread on collateral tissues, with ultrasound devices having the smallest collateral area with a damaging temperature spread. Choosing ultrasound instead of bipolar devices when performing laparoscopic radical prostatectomy, could have possible implications in preserving the neurovascular bundles and in offering better functional outcomes.