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SURGICAL TECHNIQUE

Operative technique: Transperitoneal robotic adrenalectomy

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Introduction

There are multiple types of adrenal tumor ranging from a benign mineralo-corticoid secreting adenoma of the adrenal cortex (Conn's aldosteronoma) to non-secreting benign (adenoma) or malignant adrenocortical tumor (adrenocortical carcinoma), and also including secreting adreno-medullary (pheochromocytoma) [1]. Conventional laparoscopy is currently the standard surgical approach for most adrenal tumors even though no randomized study has compared it with laparotomy. The increasing availability and use of the robotic technique has made transperitoneal robotic adrenalectomy an option in some surgical centers. The potential benefits of using the robotic system have been evaluated in clinical practice but its additional cost is still a significant disadvantage. The robotic system seems to be particularly useful in the most difficult patients (obesity, voluminous tumor, paraganglioma, partial or bilateral surgery) [2,3]. The additional costs associated with the robotic system could be offset by reduced hospital stay, increased recruitment, improved ergonomics for the surgeon, and improvement in peri-operative outcomes in some of the more challenging patients. The performance of unilateral transperitoneal adrenalectomy is a common act of endocrine surgery (about 2000 cases annually in France) [4,5]. Our technique using the Intuitive Si Robotic Model is described below.

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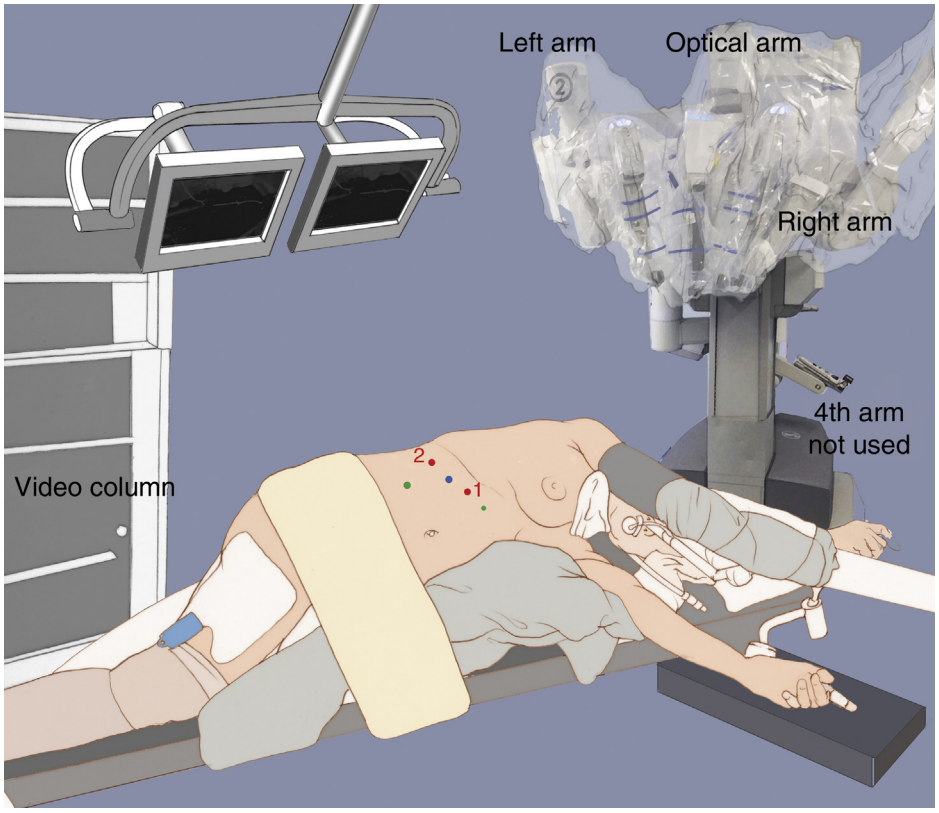

1 Patient positioning and trocar arrangement

The patient is placed in strict left lateral decubitus for right adrenalectomy. Conversely, for a left adrenalectomy the patient is positioned in strict right lateral decubitus. Flexion of the operating table, along with insertion of a bolster pillow opens the costo-diaphragmatic angle and thus improves the exposure of the operating area. Special care is taken in positioning the robotic arms to avoid contact pressure points, especially when the robotic apparatus is placed adjacent to the patient. Initially, the surgeon and his assistant stand next to the patient facing the abdomen, while the optical trocar is inserted by the open laparoscopic technique two fingerbreadths beneath the costal margin and during insufflation of the peritoneal cavity. After insufflation through the optical trocar (blue), the other trocars are placed under direct camera visualization. For a right adrenalectomy, four more trocars are placed: two 8 mm trocars for the two robotic arms (1 and 2, red), a 10 mm trocar for a fan liver retractor and a 5 mm trocar for the assistant's left hand (green). For a left adrenalectomy, 3 other trocars are placed: two 8-mm trocars for the two robotic arms, and a 5 mm trocar for the assistant).

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