Visualized Surgery

Robotic clipless transperitoneal adrenalectomy

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Introduction

Robotic adrenalectomy is a minimally invasive alternative to traditional laparoscopic adrenalectomy. In addition to the benefits of decreased postoperative pain and shortened recovery time represented by laparoscopic adrenalectomy, robotic technology adds to the advantages of laparoscopy the benefits of a 3-dimensional display that enhances depth perception. Robotic approach enables the surgeon to operate in a comfortable, seated position in which the eye, hand, and target are in line; and has instruments that contain a "wrist" joint to improve dexterity (1-3).

Recently, many authors reported on the safety on clipless laparoscopic cholecystectomy (4-6). Here we are showing a case where clipless adrenal surgery was performed using robotic approach.

Procedure steps

The patient is placed in a lateral decubitus position with the adrenal lesion side up. Pneumoperitoneum is created. Port positioning is almost similar to that used in laparoscopic adrenal surgery. Trocars are placed under direct camera visualization, and the robot was then docked.

Next, the operating surgeon controls the robot at the console; the first assistant handles the laparoscopic instruments inserted through an accessory trocar. The role of the assistant at the operating table was to change the robotic instruments as necessary and to use the clip applier for division of the adrenal vein. However, in this case, no clips were used. The following steps of the procedure are essentially identical to those for laparoscopic adrenalectomy.

Intraoperative ultrasound was performed using a 7.5 MHz, 10 mm, SSD-1700 linear transducer (Aloka, Wallingford, Connecticut) at a focal depth of 2 to 3 cm to identify the vascular landmarks, which includes identification of the inferior Vena cava and renal vein on the right side and the splenic vein and renal vein on the left side. Saline irrigation was sometimes done to aid in signal transmission. An attempt was made to image the whole gland before mobilization. Initially imaging was performed on the anterior surface of the coronal plane to determine the general location of the tumor. Identification of the main adrenal vein was done by the ultrasound probe. After limited adrenal mobilization off of the upper kidney pole the ultrasound probe was directed medial, lateral and superior from the various exposed surfaces. After the tumor was identified on intraoperative ultrasound, the operation is completed with the robotic assistance similar to traditional laparoscopic surgery.

Comments

We here presented a robotic adrenaldetomy and demonstrated that clipless technique using hamonic scalpel. Addition of intraoperative ultrasound examination is a helpful adjunct to localize vascular landmarks mainly in obese patients. Robotic assisted transperitoneal clipless adrenalectomy is a safe and effective approach for adrenal surgery.

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