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NEW TECHIQUES AND TECHNOLOGIES

Initial experience with the new da Vinci single-port robot-assisted platform☆

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KEYWORDS
Robot-assisted;
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Abstract

Objective: To describe our experience in the first cases of urological surgeries performed with the da Vinci single-port robot-assisted platform.

Material and methods: We performed 5 single-port robot-assisted surgeries (R-LESS) between May and October 2014. We performed 3 ureteral reimplant surgeries, one ureteropyeloplasty in an inverted kidney and 1 partial nephrectomy. The perioperative and postoperative results were collected, as well as a report of the complications according to the Clavien classification system.

Results: Of the 5 procedures, 4 were performed completely by LESS, while 1 procedure was reconverted to multiport robot-assisted surgery. There were no intraoperative complications. We observed perioperative complications in 4 patients, all of which were grade 1 or 2. The mean surgical time was 262 min (range, 230–300).

Discussion: In our initial experience with the da Vinci device, R-LESS surgery was feasible and safe. There are still a number of limitations in its use, which require new and improved R-LESS platforms.

PALABRAS CLAVE
Robótica;
Puerto único;
Cirugía

Experiencia inicial con la nueva plataforma de puerto único da Vinci robótico

Resumen

Objetivo: Describir nuestra experiencia en los primeros casos de cirugías urológicas realizadas mediante el puerto único robótico da Vinci.

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Material y métodos: Se realizaron 5 cirugías robóticas por puerto único (R-LESS) entre mayo y octubre de 2014. Se realizaron 3 reimplantes ureterales, una ureteropieloplastia en un riñón invertido y una nefrectomía parcial. Se recogieron los resultados peri- y postoperatorios así como un informe de las complicaciones según la clasificación de Clavien.
Resultados: De los 5 procedimientos, 4 se realizaron completamente por LESS, mientras que uno se reconvirtió a cirugía robótica multipuerto. No hubo complicaciones intraoperatorias. Se observaron complicaciones perioperatorias en 4 pacientes, siendo todas de grado 1 o 2. El tiempo operatorio medio fue de 262 min (rango 230-300).
Discusión: En nuestra experiencia inicial con el dispositivo da Vinci, la cirugía R-LESS es factible y segura. Persisten algunas limitaciones en su uso, que requieren de nuevas plataformas R-LESS mejoradas.

Introduction

Laparoendoscopic single-site surgery (LESS) covers any minimally invasive procedure that is performed by a single incision using laparoscopic material or emerging new instruments, with the additional designation of U-LESS when only the navel is used.[1]

Patients' interest in surgeries with less postoperative pain and fewer scars at equal risk has been reported.[2]

The initial experience of laparoscopic LESS surgery was promising, but it soon revealed many difficulties in relation to external collision, lack of force in retraction, lack of triangulation, and uncomfortable ergonomics for the surgeon.[3]

The use of a robotic platform could reduce some of these limitations. Although the da Vinci system (Intuitive Surgical Inc, Sunnyvale, CA, U.S.A.) has proved useful in all LESS surgeries, it is not a system designed for this purpose.

However, although its use has spread, the role of the R-LESS is still in continuous development, resulting in procedures of greater difficulty for the surgeon compared to conventional robotic surgery, not exempt from limitations and difficulties inherent to the application of robotic technology.[4] For its realization, multiple single port devices have been used.[5]

The objective of the present study is to describe our initial experience with the use of this R-LESS device, measuring the rate of reconversion to determine its applicability and to evaluate the safety of the processes through the collection of intraoperative and perioperative complications.

Material and methods

The da Vinci R-LESS single-site device consists of a flexible, hourglass-shaped silicon port with 4 working channels. In 2 of them, curved cannulas are inserted for flexible instruments (VeSPA Intuitive Surgical Inc) and it has another 2 channels, one for the insertion of an 8.5 mm *lens* and another one for the assistant.

When inserting it, the curved left cannula is inserted first in a downward direction toward the right side, while on the left side, it is done in an opposite manner toward the left side (Fig. 1)

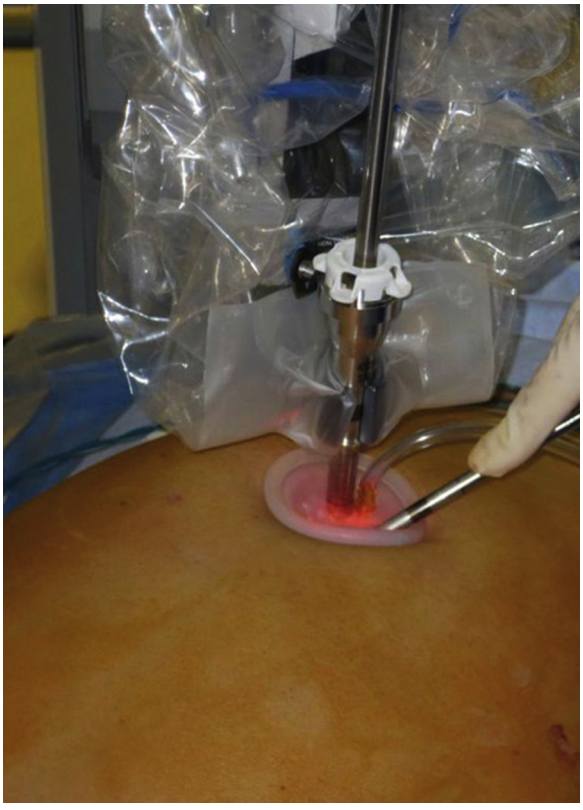

Figure 1 Insertion of cannula into the device.

The robot control system automatically recognizes and reassigns the arms, changing the assignment of the hands. This readjustment makes it possible to reduce the collisions between the instruments, the main problem of laparoscopic single site devices.

Selected patients and outcome measurement

We performed a descriptive study recording a total of 5 surgeries with this single site device by a single surgeon, performed between May and October 2014. Patients were selected according to the surgeon's criteria, taking into account intermediate complexity surgeries with BMI below