Actas Urol Esp. 2013;37(7):425–428

Actas Urológicas Españolas

www.elsevier.es/actasuro

ORIGINAL ARTICLE

Robotic partial nephrectomy with selective parenchymal compression (Simon clamp)☆

O.A. Castillo[a,b,*], A. Rodriguez-Carlin[a], G. Lopez-Fontana[a], E. Aleman[a]

[a] *Unidad de Urología y Centro de Cirugía Robótica, Clínica INDISA, Santiago, Chile*
[b] *Facultad de Medicina, Universidad Andrés Bello, Santiago, Chile*

Received 6 August 2012; accepted 27 November 2012
Available online 26 October 2013

KEYWORDS
Partial nephrectomy;
Robotic surgery;
Laparoscopy;
Renal tumor;
Nephron-sparing surgery

Abstract

Objective: To present our initial experience using selective renal parenchymal ischemia, without hilar clamping, in robotic-assisted partial nephrectomy.

Materials and methods: In four patients with T1a renal tumor we performed robotic-assisted partial nephrectomy, using the Simon's clamp (Aesculap®). It provides selective parenchymal compression without the need of vascular clamping. All patients had exofitic renal tumors in polar location. Renal parenchymal reconstruction was done as the standard technique.

Results: The median age was 49.6 years (42–59), 3 male and 1 female patient. Median operative time was 71.6 min (40–120). Mean estimated bleeding was 250 ml (50–400). Average tumor size was 3.25 cm (1.5–5.3). There were no complications and the average hospital stay was 3.5 days (1–7). The pathology was informed as renal cell carcinoma in three patients and one hemorrhagic cyst. The surgical margins were negative.

Conclusion: Our preliminary results shows that selective renal parenchymal compression, with the Simon's clamp, provides an alternative to vascular control in selected patients with polar renal tumors.

PALABRAS CLAVE
Nefrectomía parcial;
Cirugía robótica;
Laparoscopia;
Tumor renal;
Cirugía conservadora de nefronas

Nefrectomía parcial robótica con compresión selectiva del parénquima (pinza de Simon)

Resumen

Objetivo: Presentar nuestra experiencia inicial en nefrectomía parcial robótica (NPR) realizando compresión selectiva del parénquima renal, sin pinzamiento del hilio renal.

Material y métodos: Se realizó NPR utilizando el sistema robótico da Vinci S HD con abordaje transperitoneal y compresión selectiva del parénquima renal a 4 pacientes con masa tumoral exofítica de localización polar. Se utilizó la pinza de Simon laparoscópica (Simon's

☆ Please cite this article as: Castillo O, Rodriguez-Carlin A, Lopez-Fontana G, Aleman E. Nefrectomía parcial robótica con compresión selectiva del parénquima (pinza de Simon). Actas Urol Esp. 2013;37:425–428.

* Corresponding author.
E-mail address: octavio.castillo@indisa.cl (O.A. Castillo).

2173-5786/$ - see front matter

clamp Aesculap®) sin control vascular del hilio renal. La reconstrucción renal fue la utilizada regularmente.
Resultados: La edad promedio fue de 49,6 años (42-59) con una relación hombre/mujer 3:1. El tiempo operatorio promedio fue de 71,6 min (40-120). El sangrado estimado promedio fue de 250 ml (50-400). El tamaño tumoral promedio fue de 3,25 cm (1,5-5,3). No hubo complicaciones perioperatorias ni postoperatorias. La estancia media hospitalaria fue de 3,5 días (1-7). No hubo complicaciones hemorrágicas intra ni postoperatorias. El examen patológico de las lesiones reveló carcinoma renal en 3 casos y quiste hemorrágico en un caso. No hubo márgenes quirúrgicos positivos.
Conclusiones: Nuestros resultados preliminares muestran que la NPR con compresión regional del parénquima renal es una alternativa quirúrgica factible en pacientes seleccionados y tumores de localización polar, proporcionando un campo quirúrgico adecuado para la resección tumoral.

Introduction

The incidental finding of renal tumors has been a consequence of the frequent application of imaging techniques in the study of non-specific abdominal symptoms. This change has resulted in a migration of the diagnosis to renal tumors of lower size and better nuclear differentiation, subject to sparing renal surgery.[1] Laparoscopic partial nephrectomy (LPN) was initially applied to tumor lesions smaller than 4 cm, of favorable anatomical location (T1a), expanding then to tumors of technically more complex location and larger lesions (T1b).[2,3] However, laparoscopic surgery is technically difficult, it requires a long learning curve, and it is not exempt from serious complications. This type of procedure is restricted to experienced surgeons because of the risk of vascular injury during the dissection and transient occlusion of the renal hilum, as well as the need to reduce the warm ischemia time during tumor resection, minimizing the deterioration of the renal function.[3,4]

In 2009, Simon et al. described performing LPN with renal parenchymal compression and without renal hilar occlusion in 3 patients with tumor of polar location, using laparoscopic Simon's clamp (Simon's Clamp Aesculap® AG, Tuttlingen, Germany).[5] We further describe our initial experience with robotic partial nephrectomy (RPN) performing selective renal parenchymal compression without renal hilar clamping using Simon's clamp.

Materials and methods

We review the surgical results in 4 patients who underwent renal parenchymal compression, without vascular control, of a personal series of 60 robot-assisted partial nephrectomies. The data were collected prospectively and analyzed retrospectively. Preoperative evaluation included computed tomography and/or MRI, with vascular phase reconstruction. We studied the tumor location, the size, the clinical stage, the operative time, the compression time of the renal parenchyma, the pathological stage, the surgical margins, and the complications.

Surgical technique

We used the transperitoneal pathway in all cases. The patient is placed in lateral decubitus position and secured to the operating table, with protection of pressure zones. We conduct Veress needle pneumoperitoneum classically. All the procedures were performed with a technique with 4 robotic arms and 30° optics, using 2 additional trocars: one for the helper and the other for the laparoscopic Simon's clamp (Figs. 1 and 2). The renal hilum is dissected identifying the vein and artery, which are marked with a vascular elastic for eventual control if necessary. Laparoscopic Simon's clamp is placed (Aesculap AG, Tuttlingen, Germany) through a 12-mm trocar (Fig. 3) around the tumor, 1–2 cm proximal to the resection line producing regional ischemia. The tumor is dissected with cold scissors and renal reconstruction is subsequently performed with Monocryl® 3-0 continuous suture in the calyceal-vascular plane and a second parenchymal plane with separated sutures of Vicryl® 2-0 with CT-1 needle, with the Hem-O-Lok® staple sliding technique described by Benway et al.[6] According to our

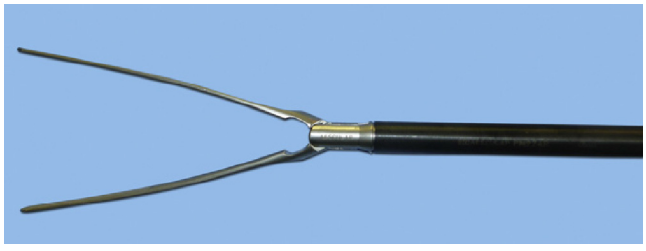

Figure 1 Open laparoscopic Simon's clamp.

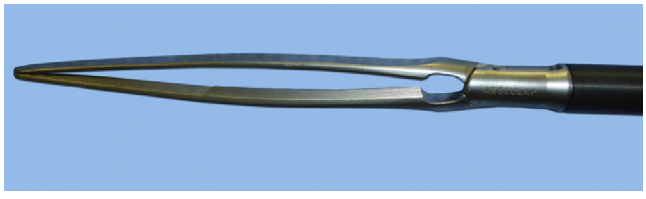

Figure 2 Closed laparocopic Simon's clamp.