



## SKILL AND TALENT

# Umbilical single-port pyelolithectomy on horseshoe kidney: A new indication<sup>☆</sup>

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### KEYWORDS

Single-port;  
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### Abstract

**Introduction:** Laparoscopic surgery through a single port is an evolution of laparoscopic surgery, possible after recent technological development of new access systems. It is an established minimally invasive technique, although its indications in the field of Urology are currently under development.

**Materials and methods:** We present the first case of incision-less pyelolithectomy, performed through a single-port placed in the umbilicus, performed in a 47-year-old male patient (38.2 BMI) with solitary 4-cm-diameter lithiasis in a horseshoe kidney. An umbilical 2.5-cm incision was used for the introduction of a prototype of the reusable Richard Wolf single-port system, without any ancillary elements.

**Results:** After placement of left double-J stent proximal left ureter and renal pelvis, pyelolithectomy and pyelorrhaphy were performed with DuoRotate-Instruments © (Richard Wolf). Water-tightness was demonstrated with methylene blue intravesical instillation and no drain was placed. The procedure lasted for 280 min and bleeding was 30 cm<sup>3</sup>. The patient was discharged 24 h later without pain.

**Conclusion:** Incision-less pyelolithectomy is a feasible and resolute option to treat pelvic lithiasis. It can be considered the most beneficial option in esthetical terms in experienced centers, especially in peculiar cases like horseshoe kidney.

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**PALABRAS CLAVE**

Puerto-único;  
 Pielolitectomía;  
 Riñón en herradura;  
 Técnica quirúrgica

## Pielolitectomía por puerto único umbilical sobre riñón en herradura: una nueva indicación

### Resumen

**Introducción:** La cirugía laparoscópica a través de puerto único es una evolución de la cirugía laparoscópica, que resulta posible gracias al desarrollo tecnológico reciente de nuevos sistemas de acceso. Se trata de una técnica establecida en el campo de la cirugía mínimamente invasiva, pero sus indicaciones en el campo de la Urología están desarrollándose en la actualidad.

**Material y Métodos:** Presentamos la primera pielolitectomía sin incisión, a través de puerto único colocado en el ombligo, realizada en un paciente varón de 47 años (IMC 38,2) con riñón en herradura portador de una litiasis piélica única de 4 cm de diámetro. Se empleó una incisión umbilical de 2,5 cm para la introducción del prototipo de puerto único reutilizable de Richard Wolf, sin necesidad de elemento auxiliar adicional alguno.

**Resultados:** Tras colocación de doble-J izquierdo se llevó a cabo liberación de uréter proximal izquierdo y pelvis renal, pielolitectomía y pielorrafia con instrumentos-DuoRotate © (Richard Wolf). Se comprobó estanqueidad de la vía urinaria mediante instilación intravesical de azul de metileno y no se dejó drenaje. El procedimiento duró 280 minutos y el sangrado fue 30 cc. El paciente fue dado de alta a las 24 horas sin dolor alguno.

**Conclusión:** La pielolitectomía sin incisión es una opción factible y resolutive para el tratamiento de la litiasis piélica. En centros con experiencia en cirugía a través de puerto único puede considerarse la opción más beneficiosa estéticamente hablando, sobre todo en casos especiales como el riñón en herradura.

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## Introduction

The experience with laparoendoscopy through single port in Urology started with renal surgery, probably due to familiarity with the laparoscopic transperitoneal approach for this type of surgery, particularly tumor and subsequently partial nephrectomy and prostatectomy.<sup>1</sup> The shortage of studies comparing laparoscopy through single port and conventional laparoscopic surgery makes real comparison between both techniques difficult. However, the yet more recent addition of robotics to single-port surgery has led to increased popularity for this type of approach, but the reality is that very few highly specialized centers have this technique in its portfolio of services, because it needs great training, even for experienced laparoscopists, and also important instrumental resources.

The single-port reusable prototype developed by Richard Wolf has significant advantages, since it can be used on multiple occasions, and the incision required is significantly smaller than in other elements of similar approach. Moreover, it does not require any external fixation and the instruments with double rotation (DuoRotate-Instruments®) used allow for very precise movements. Its totally umbilical placement can even perform surgery 'without visible incision'.

Many procedures are being developed at present with this type of single-port devices, although many surgeries require the placement of fine accessory ports of 2–3.5 mm caliber. There is no doubt that surgery through a single port is assuming a technology upgrade challenge, still under development. The first descriptions of its application in Urology were flank incision nephrectomy and transumbilical ureterolithectomy.<sup>2,3</sup> Transumbilical nephrectomy<sup>4</sup> and pyeloplasty<sup>5</sup> were then described. Gradually, most

urologic procedures have been developed using single port: adrenalectomy, nephroureterectomy, living donor nephrectomy, ureteral replacement, ureteral reimplantation, augmentation enterocystoplasty, radical cystectomy, and radical prostatectomy.<sup>1,6–10</sup> We describe the first case of pyelolithectomy 'without incision' through single port on a horseshoe kidney with large lithiasis.

## Casuistry

We report a 47-year-old male with horseshoe kidney and left renal pelvis lithiasis of 4 cm in diameter. The patient had a body mass index (BMI) of 38.2 kg/m<sup>2</sup> and complained about abdominal pain accompanied by occasional hematuria. The study by abdominal CT scan showed the presence of solitary renal lithiasis (Fig. 1). We proposed the performance of single-port transumbilical pyelolithectomy, to which the patient agreed. Six months earlier, he had received conventional laparoscopic cholecystectomy.

## Surgical technique

Under general anesthesia, it was placed in lithotomy for left double-J ureteral catheter placement. Subsequently, the patient was placed in right lateral decubitus. A 25-mm incision was performed at the umbilical level reaching the fascia. No radial cut was necessary to increase the length of the incision or enlargement of the fascial incision, introducing Richard Wolf® single-port by rotating maneuver that fits an incision of this size, getting excellent fastening to the abdominal wall without requiring accessory suture (Fig. 2).

The pneumoperitoneum was achieved through one of the holes that the port designed for that purpose has.

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