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ORIGINAL ARTICLE

Flexible ureteroscopy for renal stones☆

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KEYWORDS
Renal lithiasis;
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Abstract

Objectives: The objectives of this prospective study are to present our experience with retrograde intrarenal surgery (RIRS), and to analyze its results and complications.
Materials and methods: 150 patients with renal stones were treated with RIRS. 111 cases showed single stones whilst multiple stones were observed in 39 cases. The mean size was 19.12 mm (r: 5–74). Success rate was defined as the absence of residual stones or the presence of fragments ≤2 mm.
Results: In 21 (14%) patients RIRS could not be performed on first attempt because it was impossible to place the ureteral access sheath. The immediate success rate was 85.7% and 91.6% at three months later. The average operating time was 85 min (r: 25–220). Postoperative complications were observed in 22 cases (14.6%), although most of them were classified as Clavien 1 and 2 (19 cases), and only 2% (3 cases) showed Clavien 4 complications (sepsis requiring admission in the intensive care unit). 10 patients underwent a second procedure in order to complete the treatment. Thus, the number of procedures per patient was 1.06. There were nolate complications.
Conclusions: The treatment of renal stones with flexible ureteroscopy using the ureteral access sheath shows a high successful rate with a low complication rate. In order to define its indication more precisely, randomized studies comparing RIRS with minimally invasive percutaneous nephrolithotomy procedures (miniperc and microperc) would be necessary.

PALABRAS CLAVE
Litiasis renal;
Ureteroscopia flexible;
Cirugía retrógrada intrarrenal

Tratamiento de la litiasis renal mediante ureteroscopia flexible

Resumen

Objetivos: Presentamos en este trabajo prospectivo nuestra experiencia con la cirugía retrógrada intrarrenal (CRIR), analizando sus resultados y las complicaciones.
Material y métodos: Hemos tratado 150 pacientes afectados de litiasis renal mediante CRIR. Lalitiasis fue única en 111 casos y múltiple en 39, siendo el tamaño medio de 19,12 mm (r: 5-74).

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Definimos éxito en nuestra serie como la ausencia de litiasis o fragmentos residuales menoresde 2 mm.
Resultados: En 21 pacientes (14%) no pudo realizarse la CRIR en un primer intento por imposibilidad de ascenso de la vaina ureteral. La tasa de éxito inmediata fue del 85,7% y a los 3 mesesdel 91,6%. El tiempo medio operatorio fue 85 min (r: 25-220). En el postoperatorio inmediatohubo complicaciones en 22 pacientes (14,6%), si bien la mayoría de ellas fueron Clavien 1 y 2(19 casos) y solo un 2% sufrió complicaciones Clavien 4 (3 casos de sepsis que precisaron ingresoen la unidad de cuidados intensivos). En 10 pacientes se precisó una segunda intervención paracompletar el tratamiento, por lo que el número de procedimientos por paciente fue de 1,06. No hubo complicaciones tardías.
Conclusiones: El tratamiento de la litiasis renal mediante ureteroscopia flexible obtiene unatasa alta de éxito con bajas complicaciones. Precisamos estudios aleatorizados que la comparencon la nefrolitectomía percutánea, en sus modalidades menos invasivas (miniperc y microperc) para definir con exactitud sus indicaciones.

Introduction

It has been over 2 decades since the first flexible ureteroscopies (FUR) were performed by Bagley.[1] Subsequently, Fuchs[2] systematized the technique and from then until now, technological advances have allowed for the treatment of renal lithiasis by FUR to be a reality.

Although in the endourological era extracorporeal lithotripsy (ESWL) and percutaneous nephrolithotomy (PNL) have been the gold standard in the treatment of renal lithiasis, FUR is now another option, as provided by the latest update of the European clinical guidelines in urolithiasis.[3] This has been made possible thanks to the improvement of flexible ureteroscopes, not only in view with the advent of digital technology, but in deflection, mobility, ergonomics, and durability. These advances, coupled with the miniaturization of holmium laser fibers and the use of nitinol in the manufacture of baskets, have made it possible to report high success rates in recent series.[4–6]

In this prospective study, we present our experience with retrograde intrarenal surgery (RIRS), analyzing its results and complications.

Materials and methods

From June 2009 to March 2013 we treated 150 patients (83 men, 67 women) suffering from renal lithiasis by means of RIRS. The mean age was 52.3 years (r: 19–81). The lithiasis was single in 111 cases and multiple in 39, the average size being 19.12 mm (r: 5–74). The inclusion criteria for this treatment included the previous failure of other endourological techniques, malformation of the urinary tract, obesity, and preference of the patient (Table 1). The demographic variables of the lithiases are presented in Table 2.

Table 1 Inclusion criteria.

Indications	N: 150
Failure ESWL	57 (38%)
Residual post-PNL	29 (19.3%)
Malformation of the excretory pathway	13 (8.6%)
Obesity	37 (24.6%)
Patient preference	14 (9.3%)

Table 2 Demographic variables of the lithiasis.

Mean size	19.12 mm (r: 5–74)
Single lithiasis	111
Lower calyx	37
Middle calyx	19
Upper calyx	27
Upper calyx diverticulum	1
Middle cáliz diverticulum	2
Pyelic	15
Pyelic associated to UPJ	8
Horseshoe kidney	2
Multiple lithiasis	39

The image diagnosis was performed by means of intravenous urography (IVU) and ultrasound. A total of 39 patients (26%) were carriers of double-J at the time of surgery.

Evaluation of the success rate

We define success in our series as the absence of lithiasis or residual fragments smaller than 2 mm. Its immediate assessment was made by means of the endoscopic examination of the renal cavities at the end of the procedure and with plain abdominal ultrasound the day after the surgery. The final success rate was evaluated by intravenous urography and ultrasound at 3 months postoperatively.

Technique

The patient was placed in lithotomy position under general anesthesia. We systematically used, as antibiotic prophylaxis, 2 g iv amoxicillin-clavulanic. In case of allergy to beta-lactams, we switched to 400 mg iv ciprofloxacin. We started the process with rigid ureteroscopy to place a guide wire to the renal cavities and perform ureteroscopy of the distal section of the ureter, making dilation under the view of this segment. Then, we collected urine from the renal cavities that we sent for bacteriological study, very useful in postsurgical infections and vital in cases of sepsis. The