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SURGICAL TECHNIQUE

New technique for nephron-sparing surgery in polar tumors. A modification of the Kim technique☆

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Abstract
Introduction and objectives: Nephron-sparing surgery (NSS) is the indication, provided it is feasible and meets the international treatment guidelines. One of the objectives of performing NSS is to reduce the ischemia time as much as possible. We propose a surgical technique for treating polar renal tumors and those larger than 4 cm based on the principle of the technique described by Kim in 1964.
Method: The technique performs a continuous circular suture on the base of the tumor, achieving compression of the renal pole without vascular clamping, facilitating haemostasis and avoiding the blind transfixion performed in Kim's original technique. We selected 28 patients for the implementation of the technique.
Results: The patients' mean age was 56 years (30–69). The RENAL scores were as follows: 12 of low complexity, 12 of moderate complexity and 4 of high complexity. The mean surgical time was 109 minutes (75–140), and the mean estimated blood loss was 120 mL (50–300 mL). No positive margins were identified, and no patients required blood transfusions. The mean stay was 3.7 days (2–6). There were no Clavien grade 2 or higher complications. There were 3 Clavien 1 complications (fever). The difference in glomerular filtration rate was −0.71 mL/min/m^2. The pathology was malignant in 26 cases, 19 of them clear-cell carcinomas. Two cases were reported as oncocytomas.
Conclusion: The proposed technique showed acceptable results, with a low rate of complications in the patient group.

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PALABRAS CLAVE
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Nueva técnica para cirugía conservadora de nefronas en tumores polares. Una modificación de la técnica de Kim

Resumen

Introducción y objetivos: La cirugía conservadora de nefronas (CCN) es la indicación siempre que sea factible y cumpla con las guías de tratamiento internacional. Una de las premisas a seguir al realizar una CCN es disminuir el tiempo de isquemia al mínimo posible. Proponemos una técnica quirúrgica para el tratamiento de los tumores renales polares y mayores de 4 cm basados en el principio de la técnica descrita por Kim en 1964.

Método: La técnica realiza una sutura continua circular sobre la base del tumor, logrando compresión del polo renal sin clampaje vascular, facilitando la hemostasia y evitando la transfixión a ciegas que realiza la técnica original de Kim. Seleccionamos 28 pacientes para la realización de la técnica y reportamos los resultados obtenidos.

Resultados: Los pacientes presentaban una edad media de 56 años (30-69). El resultado de RENAL score: 12 de baja complejidad, 12 de moderada y 4 de alta complejidad. Tiempo quirúrgico medio: 109 minutos (75-140); la media de pérdida estimada de sangre fue 120 ml (50-300 ml); no se identificó margen positivo y no hubo ningún caso con necesidad de transfusión sanguínea. El tiempo medio de ingreso fue de 3,7 días (2-6). No se presentaron complicaciones grado 2 o mayor de Clavien. Hubo 3 complicaciones Clavien 1 (fiebre). La diferencia de tasa de filtración glomerular fue de −0,71 ml/min/m^2. La anatomía patológica fue maligna en 26 casos, 19 de ellos carcinomas de células claras. Dos casos se informaron como oncocitomas.

Conclusión: La técnica propuesta mostró resultados aceptables, con baja tasa de complicaciones en el grupo de pacientes presentados.

Introduction

Nephron-sparing surgery has been established as a valid option for the surgical treatment of renal occupying masses, incidental tumors, and even those up to 4 cm in size are considered the surgical tactic of choice. Nowadays, some authors already suggest conservative surgery for T1b and T2 tumors, when the technical conditions allow it,[1] since the same oncological results are obtained as with radical surgery, and on the other hand, the chances of renal failure and other morbidities can be reduced.[2]

In conservative surgery, the treatment of the pedicle plays a fundamental role in relation to the sequelae that can be left in the renal parenchyma. At present, when the anatomical conditions enable it, the clamping of the main pedicle is usually reduced, using segmental clamping and in selected cases without clamping, such as peripheral tumors, exophytic, smaller than 3 cm, and with low RENAL score.[3]

Polar tumors are often the most accessible for conservative surgery of nephrons; in this topography, conservative surgery is indicated in T1a and whenever it is feasible in T1b.[4]

In 1964 Kim described a technique for polar tumors that binds the tumor base, thereby controlling hemostasis without the need for vascular clamping.[5] The technique (Fig. 1) consists in passing with 2 straight needles a complete loop of thread at the base of the tumor, once the point is crossed the threads are cut at the level of the eye of the needles forming 3 pedicles, 2 lateral and a central one, which are knotted at the base of the tumor, thereby controlling hemostasis without the need for vascular clamping.

The problem that may arise with this technique is that blind needle transfixion could lead to tumor penetration, resulting in a positive margin and/or loss of compression per section of the threads during resection. Using the same concept of creating a technique to avoid vascular clamping in the treatment of polar tumors, we describe a technique to avoid the preceding problem and we report our initial experience.

Material and method

From June 1, 2010 to June 1, 2015, 28 kidney tumors with a minimum size of 4 cm and polar location were selected prospectively to analyze the results of the circular suture technique, treated by the same surgeon CA.

We analyzed sex, age, location: laterality, upper or lower pole; approach pathway; RENAL score; surgical time, estimated blood loss, need for clamping of the pedicle, opening of the excretory pathway and its synthesis, positive margins and need for new resection to obtain negative margin; average size; histopathology, stage; hospital stay, post-operative complications according to Clavien classification, difference in pre and postoperative GFR.

Description of the circular suture technique

Once the kidney is released, the tumor limit is identified in the parenchyma, at 7–10 mm from the base thereof, a suture with polyglycolic acid (0 or 1) continuous, linear, and circular is carried out that penetrates 5 to 7 mm in the thickness of the parenchyma (Fig. 2). Upon completion of the