

Our Initial Experience with Partial Nephrectomy in Najaf, Iraq

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الخبرة الإستهلاية لعمليات الرفع الجزئي للكلية في محافظة النجف- العراق

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الخلاصة

إن الاستخدام الواسع لأجهزة التشخيص الحديثة أظهرت حالات عرضية لأورام صغيرة في الكلية.

منهج الدراسة:

شملت الدراسة (15) خمسة عشر مريضاً ممن لديهم أورام الكلية بحجم يتراوح بين 4 – 7,5 سم ، و بأعمار تتراوح بين 22 – 80 عاماً، تمت معالجتهم عن طريق عمليات الرفع الجزئي للكلية و متابعتهم عن طريق فحص السونار لمدة تتراوح بين 3 – 24 شهراً.

النتائج:

كان التشخيص الأولي قبل التداخل هو ورم الكلية في (12) إثننا عشرة حالة، و أكياس مائية في (3) ثلاث حالات. من بين حالات الورم الأولية، هناك حالة واحدة ثبت كونها أكياس مائية، و حالة واحدة أخرى ثبت كونها حالة التهاب مزمن، و العشر حالات الأخرى هي أورام الكلية الخبيثة. حافات الورم كانت سلبية الفحص النسيجي في (83,4%) من الحالات، و إيجابية في حالتين (16,6%) مما تطلب إستئصال أعماق لحافات الورم.

الاستنتاجات:

إن العلاج الأمثل للأورام الصغيرة في الكلية هو عن طريق الرفع الجزئي للكلية، و بنتائج متميزة تقارب نتائج عمليات الرفع الجذري، مع الحفاظ على وظيفة الكلية. إن إيجابية حافات الورم للفحص النسيجي لا يؤثر في معدل بقاء حياة المريض العام أو المتعلق بالورم. إن تقنية الضغط اليدوي على الكلية هي التقنية المفضلة في السيطرة على النزيف خلال الرفع الجزئي للكلية في حالات الأورام الطرفية للكلية، وكذلك في حالات الأكياس المائية الطرفية للكلية. أن إستئصال الأكياس المائية فقط بدون رفع كامل للكلية في حالة الأكياس الطرفية أو القطبية، هو الحل الأمثل و بما لا يترك فرصة لعودتها ثانية.

مفاتيح الكلمات: الرفع الجزئي للكلية، أورام الكلية، أكياس مائية في الكلية.

Abstract

Introduction:

Due to the increased use of modern diagnostic imaging techniques; a growing number of small renal tumors are being diagnosed incidentally. The standard treatment for these small lesions is partial nephrectomy, with equivalent oncologic results to that of radical nephrectomy, and better renal function preservation.

Patients and methods:

Fifteen patients with renal lesions, ranging in size from 4 to 7.5 cm, had been submitted to our study; with their ages ranging from 22 to 80 years. Partial nephrectomy using manual compression was done. Patients are then followed 3 monthly by U\S checking of renal dimension, echogenicity and for recurrence. The follow up period ranges between 3- 24 months.

Results:

Of 15 patients enrolled in our study; the provisional diagnosis was hydatid cyst in 3 patients, and renal tumor in 12 patients. From those 12 cases with provisional diagnosis of renal tumors: 2 cases had their histopathology proved to be hydatid cyst in one patient, and chronic inflammatory lesion in the other, and the other 10 cases were malignant renal tumors. Two patients (16.6%) with provisional diagnosis of renal tumor had proved to be malignant on frozen sections with positive margins, for which further resection was done and the new edges proved to be negative. All other lesions (83.4%) with provisional diagnosis of renal tumor were proved to be malignant on frozen section with negative margins.

Conclusions:

Manual compression is the technique of choice for control of bleeding in partial nephrectomy for polar or peripheral lesion, with zero warm ischemia.

Hydatid cyst resection is a feasible surgical procedure for polar or peripherally situating cyst, leaving no chance for recurrence.

Longer follow up is needed to make sure that the incidence of recurrence and progression remains stable over time, and to confirm that the higher incidence rate of positive surgical margin does not translate into a worse survival rate.

Key words: *Partial nephrectomy, Renal tumor, Renal hydatid cyst*

Introduction:

Due to the increased use of diagnostic imaging; more kidney tumors are being detected incidentally leading to an increased incidence of asymptomatic organ- confined small renal masses(1). These lesions account for 48% - 60% of renal cell carcinoma diagnoses(2).

Nephron- sparing surgery is now considered the standard of care for the treatment of small renal tumors with long term oncologic results equivalent to that of radical nephrectomy(3). Indications once reserved for imperative cases (i.e. solitary kidneys, bilateral tumors or impairment of renal function) have been extended to patients with a normal contralateral kidney. Partial nephrectomy is either *elective* when contralateral kidney is normal, or *relative* indication when contralateral kidney is functioning but affected by a condition that may impair renal function; or *absolute* indication for anatomical or functional solitary kidney. Moreover; there is a growing evidence that partial nephrectomy can be safely recommended for larger renal tumors, provided that surgical resection is technically feasible (4, 5,6). A primary goal of nephron- sparing surgery is to remove the tumor with an adequate normal parenchymal margin, and there is no doubt that every effort should be made to guarantee a negative surgical margin.

The long term prognostic significance of a positive surgical margin has not been clearly determined(7). The advantage of partial nephrectomy is that patients undergoing radical nephrectomy were at a greater risk of chronic renal insufficiency (serum creatinin > 2 mg/dl) than a similar cohort of patients undergoing partial nephrectomy(8), and serum creatinin level at 3 months postoperatively was significantly lower in the partial nephrectomy cohort (9). Also the overall survival and cancer- specific survival are not compromised when partial nephrectomy is compared with radical nephrectomy for tumor up to 7cm (10). Recently, it is documented that radical nephrectomy predisposes to a rise in overall mortality and non-cancer related mortality rate in patients with T1 renal cell cancer (11). There are convincing data showing equivalence of partial nephrectomy and radical nephrectomy for cancer control, with superiority of partial

nephrectomy in terms of preserving renal function, preventing chronic kidney disease and subsequent long term cardiac morbidity and mortality, and improved overall survival (12,13).

Patients and methods:

Fifteen patients with renal lesions of a diameter between 4 and 7.5 cm were chosen selectively in this prospective study. Their ages range between 22-80 years. Three patients are with a provisional diagnosis of hydatid cyst, and 12 patients as renal tumors. Provisional diagnosis was made by ultrasound. Computerized tomography (CT scan) was done for patients with a provisional diagnosis of renal tumor only. Patients with provisional diagnosis of angiomyolipoma were excluded from this prospective study.

Intraoperatively; all patients are under effect of general anesthesia, put in kidney position with flank incision; subcostal one for those with lower pole lesions, and with 11th or 12th rib resection for those with upper pole lesions. All were operated upon by extra- peritoneal approach, after full mobilization of the kidney and renal vasculature identification, the lesion is excised in a distance of about 1mm from the renal lesion using electrocautery. Bleeding is controlled by manual compression on the renal parenchyma, thence the bleeder is controlled by figure of 8 stitching.

Few biopsies were taken from the base of the tumor for frozen section. If frozen section shows positive result for malignancy, another 2mm thickness sheet from the base is resected till negative biopsy is reached. If all the frozen sections were negative, then renorrhaphy was done by 3- 0 cat gut suture material. All partial nephrectomies were done electively, i.e. the contralateral kidney is of normal renal anatomy and function.

The patients were then followed up 3 monthly, by ultrasound checking of the renal dimension, echogenicity and for recurrence. The follow up period ranged between 3- 24 months.

Results:

Renal lesions were on the left side in 7 patients and on the right side in 8 patients; and they are an upper pole lesion in 3 patients and lower pole lesion in 12 patients. Of 15 patients enrolled in our study; the provisional diagnosis was hydatid cyst in 3 patients, and renal tumor in 12 patients. From those 12 cases with provisional diagnosis of renal tumors; 2 cases had their histopathology proved to be hydatid cyst in one patient, and chronic inflammatory lesion in the other, and the other 10 cases were malignant renal tumors. Renal pathology was papillary renal cancer in 2 patients and clear cell cancer in 8 patients.

Two patients (16.6%) with provisional diagnosis of renal tumor had proved to be malignant on frozen sections with positive margins, for which further resection was done and the new edges proved to be negative.

All other lesions (83.4%) with provisional diagnosis of renal tumor had proved to be malignant on frozen section with negative margins.

All the operations were not associated with perioperative mortality. One patient had persistent active drain of urine for 40 days, and was managed conservatively.

During the follow up period of 3-24 months; U/S checking was done for recurrence of renal malignancy, hydatid or any renal pathology.

Renal function was normal for all patients pre operatively and post operatively.

Discussion:

The surgical technique improved over time, and the recurrence rate after partial nephrectomy are now less than 5%, and are equivalent to those of radical nephrectomy (3,14,15). The presence of a positive surgical margin on the tumor resection has traditionally been considered as a surrogate end point of tumor recurrence. It increases the risk of recurrence but does not appear to influence cancer-specific survival, and it has no impact on overall survival and not associated with increased risk of metastatic progression(16).

The technique of resecting the renal lesion is either by polar resection when the lesion is in the upper or lower pole, or by wedge resection for peripheral lesion, or by lesion-enucleation to remove the lesion only claiming it produces surgical capsule; and by enucleation, the lesion is removed safely. In the current study; one lesion had been removed by wedge resection and the others by polar resection with frozen section checking of the cut surface of the kidney, which was positive in 2 patients that necessitated further resection. All cut surfaces of the other lesions were negative.

During resection, hilar clamping minimizes blood loss and allows precise tumor excision and renal reconstruction in nearly bloodless field. Today there is no consensus about the clamping technique to be employed: artery only versus artery and vein (17), or not clamp at all(18). Previous groups have identified ischemic time as being associated with measurable renal function decline after partial nephrectomy, but this is not observed in elective partial nephrectomy due to normal contralateral kidney (19).

Long warm ischemia has increased the risk of major postoperative complications, such as urinary leakage and hemorrhage (20).

Twenty five minutes of warm ischemia is considered as cut off time for irreversible renal damage to occur (21).

The currently recommended warm ischemia time is 20 minutes or less. If longer ischemia time is anticipated, cold ischemia should be instituted. Cold ischemia with ice slush (22), should be kept as short as possible, to be ideally within 35 minutes after surface cooling of the kidney by ice slush for about 10 minutes (23). Other methods to induce cold ischemia are arterial and ureteral perfusion (24-27).

Recently an early unclamping technique has been suggested, by which only the initial parenchymal suturing is performed with the hilum clamped, while sutured renorrhaphy is performed in the unclamped revascularized kidney. This is resulted in a reduction of warm ischemia time by more than 50%(28).

In the current study, bleeding control during resection was done by manual compression of the parenchyma near the edge of the cutting surface. In this method, ischemia time is zero, and it is regarded as the way of choice for polar or peripheral lesions.

The traditional treatment for symptomatic hydatid cyst in solid organ is injection of scolical agent, then after few minutes, the cyst fluid is then aspirated then the cyst is opened, and removal of the germinal layer is required. Excision of the hydatid cyst as a whole, including all its 3 layers as a single mass is safer from the recurrence point of view.

In this study; one cyst is recurrent, which was managed by polar resection and in the other primary cysts, one was peripheral in location, which was managed by wedge resection, and others are managed nicely by polar nephrectomy.

Hence, the ideal work for renal hydatid, is resection of the cyst as a whole when the remaining renal parenchyma is worthy, while when the polar cyst destructs the nearby

parenchyma which presents as an ectocyst, so its removal by partial nephrectomy is safer from the recurrent point of view.

Conclusions:

Manual compression is the technique of choice for control of bleeding in partial nephrectomy for polar or peripheral lesion with zero warm ischemia.

Hydatid cyst resection is a feasible surgical procedure for polar or peripherally situating cyst, leaving no chance for recurrence.

Longer follow up is needed to make sure that the incidence of recurrence and progression remains stable over time, and to confirm that the higher incidence rate of positive surgical margin does not translate into a worse survival rate.

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