

INITIAL EXPERIENCE OF LAPAROSCOPIC PARTIAL NEPHRECTOMY IN HASAN SADIKIN GENERAL HOSPITAL BANDUNG

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ABSTRACT

Objective: To describe our experience about laparoscopic partial nephrectomy to treat localized renal tumour patients in Urology Department Hasan Sadikin General Hospital Bandung. **Material & method:** In 2014, there were 6 female patients that underwent laparoscopic partial nephrectomy in Hasan Sadikin General Hospital Bandung. In one case, there were tumours on both kidneys. Five patients were underwent transperitoneal approach and 1 patient were undergo retroperitoneal approach. All patients were examined with ultrasonography and Abdominal CT scan with contrast. We also calculate RENAL nephrometry score. **Results:** There were 6 female patients with left flank pain that undergo laparoscopic partial nephrectomy. In one case, there are tumours on both kidneys. In RENAL nephrometry score calculation, there were 3 patients with 10x score, 1 patient with 11x score, 1 patient with 7x score, and 1 patient with 6p score. From all of them, 4 patients were successfully performed laparoscopic partial nephrectomy, 1 patients was undergo laparoscopic nephrectomy and 1 patient is converted to open partial nephrectomy. Five patients were undergo transperitoneal approach and 1 patient was undergo retroperitoneal approach. Surgery ranged from 180-240 minutes. Intra operative bleeding was ranged from 50-200 cc. Tramadol intravenous was used for post operative pain control. With VAS score in first post operative day was 6, and 2 at the time of discharge. Hospitalized time was ranged from 4-6 days. **Conclusion:** Laparoscopic partial nephrectomy is an alternative treatment that safe for localized renal tumour. This procedure is depend on the technique and approach from each Urologist. Our limitations are we didn't have laparoscopic ultrasonography and the tumour close to pelvocalyces system.

Keywords: Laparoscopic partial nephrectomy, renal tumour.

ABSTRAK

Tujuan: Untuk memaparkan pengalaman kami tentang laparoskopi nefrektomi parsial untuk manajemen pasien tumor ginjal yang terlokalisir di Bagian Urologi RSUP Hasan Sadikin Bandung. **Bahan & cara:** Pada tahun 2014, terdapat 6 pasien wanita yang menjalani laparoskopi nefrektomi parsial di RSUP Hasan Sadikin Bandung. Pada satu kasus, didapatkan tumor pada kedua ginjal. Sebanyak 5 pasien menjalani pendekatan transperitoneal dan 1 pasien menjalani pendekatan retroperitoneal. Semua pasien diperiksa dengan ultrasonografi dan CT scan abdominal dengan kontras. Kami juga menghitung nilai nefrometri RENAL. **Hasil:** Didapatkan 6 pasien wanita dengan keluhan nyeri pinggang kiri pada kasus laparoskopi nefrektomi parsial. Pada 1 pasien ditemukan tumor pada kedua ginjal. Pada perhitungan skor RENAL Nefrometri terdapat 3 pasien dengan nilai 10x, 1 pasien dengan nilai 11x, 1 pasien dengan nilai 7x, 1 pasien dengan nilai 6p. Dari 6 pasien tersebut 4 pasien berhasil dilakukan laparoskopi nefrektomi parsial, 1 pasien dilakukan laparoskopi nefrektomi 5 pasien dilakukan dengan pendekatan secara transperitoneal dan 1 pasien retroperitoneal. Lama operasi 180-240 menit. Perdarahan intra operasi 50-200 cc. Kontrol nyeri pasca operasi menggunakan tramadol intravena dengan nilai VAS pada hari pertama operasi adalah 6, sedangkan waktu pasien pulang adalah 2. Luka operasi baik. Lama rawat pasien adalah antara 4-6 hari. **Simpulan:** Laparoskopi nefrektomi parsial merupakan alternatif tindakan operasi yang aman untuk pasien tumor ginjal yang terlokalisir. Prosedur ini tergantung dari tehnik dan pendekatan masing-masing operator. Keterbatasan kita pada tidak adanya ultrasonografi laparoskopi dan tumor menutupi sistem pelvokalis.

Kata Kunci: Laparoskopi nefrektomi parsial, tumor ginjal.

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INTRODUCTION

There are many treatment for localized renal tumour patients, surgery or non-surgery. There are many choices in surgical approach for localized renal tumour, such as open, laparoscopic and robotic surgery.^{1,2} Nowadays, open surgery approach begin to left behind laparoscopic and robotic surgery because of many complications it conveys, although some cases still need open surgery approach. Laparoscopic surgery has experienced fast progress in technique and technology, increasing success rate and decreasing its complications.³ Laparoscopic partial nephrectomy has advantages compared to open surgery from post operative pain scale, healing phase, and minimal surgical wound.⁴ However, the treatment has a limitation that measured with RENAL nephrometry score, a higher value means more difficult to perform laparoscopic partial nephrectomy.^{5,6}

OBJECTIVE

To describe our experience about laparoscopic partial nephrectomy to treat localized renal tumour patients in Urology Department Hasan Sadikin Hospital Bandung.

MATERIAL & METHOD

In 2014, there were 6 female patients that underwent laparoscopic partial nephrectomy in

Hasan Sadikin Hospital. In one case, there were tumours on both kidneys. 5 patients were underwent transperitoneal approach and 1 patient is undergo retroperitoneal approach. All patients were examined with ultrasonography and Abdominal CT scan with contrast. We also calculate RENAL nephrometry score.

RENAL nephrometry scores were assigned as numerical total of a sum of individual tumor characteristics, each assigned a point from 1–3, where a lower score for a simple tumor. Included in this sum are radius (4 cm, 4–7 cm, and 7 cm), endophytic nature of the tumor (50% exophytic, 50% crossing the interpolar lines, 100% within the polar lines).^{5,6}

The alphabetical indicators include A, P or x for anterior, posterior or indeterminate tumors, respectively. Hilar tumors are defined as tumors that abut the renal hilum. Tumors were stratified by RENAL score into low (4–6 points), intermediate (7–9 points) or high (10–12 points) groups.

Laparoscopic partial nephrectomy can be performed either with a transperitoneal or a retroperitoneal approach. The decision on the approach generally depends on the surgeon's preference. However, with increasing laparoscopic expertise the selection of the best suited access is based on tumour location on cross-sectional computed tomography sections.^{3,4} Therefore, tumours located anterior to the straight line drawn medial-to-lateral from the renal hilum to the most convex point on the lateral surface of the kidney are

Table 1. RENAL nephrometry score.⁷

	1 pt	2 pts	3 pts
(R)adius (maximal diameter in centimeter)	≤ 4	> 4 but < 7	≥ 7
(E)xophytic/endophytic properties	≥ 50%	< 50%	Entirely endophytic
(N)earness of the tumor to the collecting system or sinus (mm)	≥ 7	> 4 but < 7	≤ 4
(A)nterior/Posterior	No points given. Mass assigned a descriptor of a, p, or x		
(L)ocation relative to the polar lines*	Entirely above the upper or below the lower polar line	Lesion crosses polar line	> 50% of mass is across polar line (a) or mass crosses the axial renal midline (b) or mass is entirely between the polar lines (c)
* suffix *h* assigned if the tumor touches the main renal artery or vein			



Figure 1 and 2. (R) Radius, (E) Endophytic mass.

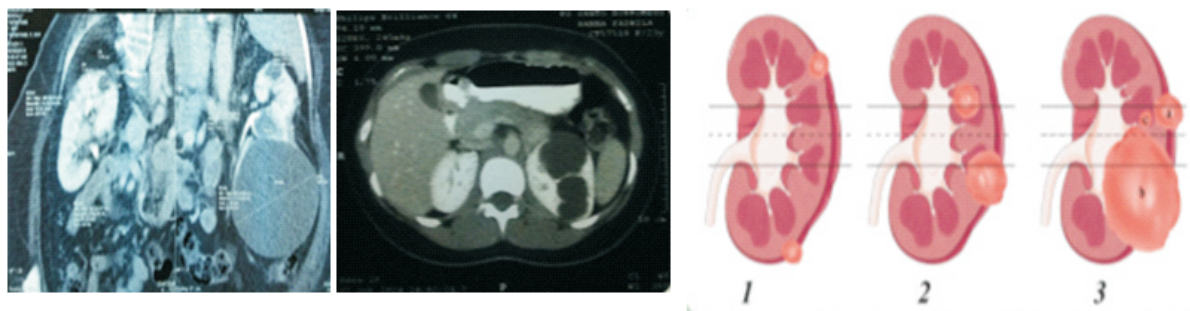


Figure 3-5. (N) Nearness, (A) Description of mass, (L) Location.⁷

generally approached transperitoneal, whereas tumours located posterior to this line are generally approached retroperitoneal. In the transperitoneal approach the colon is mobilised. The kidney and ureter are identified. The kidney must be completely prepared and the hilar vessels carefully dissected. In the retroperitoneal approach, the first step is the identification of the renal vessels. In either case, the kidney is mobilised within the Gerota fascia and defatted, maintaining the perirenal fat over the tumour.

The control of the hilar vessels is essential in laparoscopic partial nephrectomy, we choice to clamp the hilum or the renal artery with bulldog clamp. The tumour is excised using electrocauter, elevating the mass with forceps. It is essential to maintain a clear operative field to properly excise the tumour. After excision, the tumour is placed in an Endobag and left in the abdomen until the end of the procedure.

For reconstruction procedure, first, a watertight closure of the collecting system is performed. Interrupted absorbable stitches can be then placed on the renal medulla to obtain haemostasis of the segmentary arteries. The renal medulla can be also sutured in a running fashion and

the suture locked at both tail ends. The parenchymal edges are then approximated using running sutures secured with Hemo-lok clips. The renorrhaphy should be performed carefully within the ischaemia time window and the sutures can be brought over the top of a pre-prepared oxidised cellulose bolster and should be tensed and tied securely.

RESULTS

There were 6 female patients with left flank pain that underwent laparoscopic partial nephrectomy in Hasan Sadikin Hospital, with range age was ranged from 15-65 years old. In one case, there were tumours on both kidneys. The largest size of the tumour is 71 mm and the smallest is 35 mm. In R.E.N.A.L nephrometry score calculation, there were 3 patients with 10x score, 1 patient with 11x score, 1 patient with 7x score, and 1 patient with 6p score.

From all of them, 4 patients were successfully performed laparoscopic partial nephrectomy, 1 patient was undergo laparoscopic nephrectomy because the tumour size was more than half of the kidney size and the tumour close to the pelvocalyces system, and 1 patient was converted to open partial

Table 2. Result of the study.

No	Age	Tumor Size	Tumor Site	RENAL Nephrometry score	Approach	Blood Loss	Conversion to open	Surgery Time	Hospitalized Time	VAS Post Operative Day 1	VAS (Discharge)	Pathological Results
1	15 yo	Left: 5 cm Right: 1 cm	Left: Upper Right: Medial	Left: 2-1-2--x-2 : 7x Right: 1-3-3-x-2 : 9x	Transperitoneal	Left: 100 Right: -	Left: No Right: -	240 minutes	4 days	4	2	Benign Lipoma at left kidney
2	23 yo	7,1 cm	Upper	3-1-3-x-3 : 10x	Transperitoneal	50 cc	No	180 minutes	4 days	4	2	Angiomyolipoma at left kidney Medullary
3	33yo	5,1 cm	Lower	2-3-3-x-3 : 11x	Transperitoneal	50 cc	No	240 minutes	4 days	4	2	Fibroma at left kidney
4	65 yo	7 cm	Lower	3-1-3-x-3 : 10x	Transperitoneal	100 cc	No	180 minutes	6 days	4	2	Simple cyst at left kidney
5	47 yo	4 cm	Medial	1-3-3-x-3 : 10x	Transperitoneal	100 cc	No	180 minutes	4 days	6	2	Angiomyolipoma at left kidney
6	38 yo	3,5 cm	Anteromedial	1-1-3-p-1 : 6p	Retroperitoneal	200 cc	Yes	210 minutes	5 days	6	2	Angiomyolipoma at left kidney

nephrectomy because the tumour location is anteromedial but the approach was retroperitoneal. 5 patients were underwent transperitoneal approach and 1 patient was underwent retroperitoneal approach. Surgery time was ranged from 180-240 minutes. Intra operative bleeding was ranged from 50-200 cc. Tramadol intravenous was used for post operative pain control with VAS score in first post operative day was 6, and 2 at the time of discharge. There was no leakage nor pus on surgical wound site. Hospitalized time was ranged from 4-6 days. From Pathological anatomy result, there were 3 angiomyolipoma patients, 1 simple cyst patient, 1 benign lipoma patient, and 1 medullary fibroma patient. Until today, all of the patients are still on routine follow-up in a good condition. One patient with bilateral tumour is planned to perform laparoscopic partial nephrectomy in right kidney (contralateral).

DISCUSSION

Laparoscopic surgery is minimal invasive procedure optimizing an advance in technology; replace open surgical procedures that convey many complications.^{8,9} For laparoscopic partial nephrectomy to become a viable option for excising a renal tumour, several conditions must be met. Laparoscopic partial nephrectomy is indicated in patients with renal tumour with solitary kidney or compromised contralateral kidney, bilateral renal tumour and small localized renal tumor with normal contralateral kidney.^{1,10}

However, laparoscopic partial nephrectomy convey some disadvantages compared to open

surgery, such as lack of hemostasis control and reconstruction of renal parenchyma.^{7,11} To exceed this disadvantages and laparoscopic partial nephrectomy to become first choice in localized renal tumour therapy, there still a lot thing to improve, especially experience of the surgeon.

RENAL nephrometry is a tool to predict outcome in partial nephrectomy. In this study, we used RENAL nephrometry to make a decision whether a tumour suitable for partial nephrectomy surgery. However, the treatment has a limitation that measured with RENAL nephrometry score, a higher value means more difficult to perform laparoscopic partial nephrectomy.^{4,5,12}

In this study, one case had to convert to open surgery. This condition happen because of lack of intraoperative laparoscopic ultrasonography that unavailable in our hospital. This event shows us that there is so many factors that affect outcome of laparoscopic partial nephrectomy procedure, including availability of a certain equipment. But, despite of some limitations, this study prove that laparoscopic partial nephrectomy is a viable option to treat a certain cases of renal tumours, beside open surgery approach.

CONCLUSION

Laparoscopic partial nephrectomy is an alternative treatment that safe for localized renal tumour. This procedure is depend on the technique and approach from each Urologist. Our limitations are we didn't have laparoscopic ultrasonography and the tumour close to pelvocalyces system.

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