UROLOGY RETROPERITONEOSCOPY: INITIAL EXPERIENCE IN CIPTO MANGUNKUSUMO HOSPITAL

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ABSTRACT

Objective: *This study was conducted to evaluate the initial experience of retroperitoneoscopy surgery.* ***Material & method:*** *This is a descriptive study with cross-sectional design. Data was collected from medical records of Urology Department in Cipto Mangunkusumo General Hospital Jakarta, from March 2013 until February 2014. Subjects were all patients who performed retroperitoneoscopic surgery between the time periods.* ***Results:*** *Patients consisted of 9 males (42.85%) and 11 females (57.14%). Mean age was 38.95 + 21.88 years old. Proportion based on diagnosis were 5 renal failures (23.8%), 5 ureteral stones (23.8%), 3 renal cysts (14.3%), 2 PUJOs (9.5%), double 3 collecting systems (14.3%), 1 tumor (4.8%), 1 ureteral tumor (4.8%), and 1 renal diverticle (4.8%). Proportion based on kind of retroperitoneoscopy were ureterolithotomy (23.8%), nephrectomy 3 (14.3%), nephroureterectomy 3 (14.3%), renal cyst unroofing 3 (14.3%), heminephrectomy 3 (14.3%), pyeloplasty 2 (9.5%), partial nephrectomy 1 (4.8%), and diverticle coagulation 1 (4.8%). Mean operating time was 178.81 + 55.72 minutes with mean length hospitalization 8.05 + 4.4 days. Mean amount of bleeding was 98 + 69.47 cc, wound operation infection 0 (0%), peritoneal perforation 1 (4.76%), open surgery conversion 2 (9.52%), and transperitoneal laparoscopy conversion 1 (4.76%).* ***Conclusion:*** *In this study, total number of retroperitoneoscopy surgery cases still less than others abroad. Demographic characteristic showed variety than other study. Compared to other studies, the operating time was comparable but the length of stay was longer. We had higher open surgery conversion rate, while another complication was relatively the same.*

Keywords: *Laparoscopy, retroperitoneal, retroperitoneoscopy, Cipto Mangunkusumo General Hospital.*

ABSTRAK

Tujuan: *Penelitian ini bertujuan untuk mengevaluasi kembali pengalaman awal operasi retroperitoneoskopi.* ***Bahan & cara:*** *Penelitian ini adalah penelitian deskriptif dengan pendekatan potong lintang retrospektif. Data diambil dari rekam medis dan status khusus di Departemen Urologi RSUPN Cipto Mangunkusumo Jakarta, periode Maret 2013 sampai Februari 2014. Subjek adalah seluruh pasien yang menjalani tindakan retroperitoneoskopi di RSUPN Cipto Mangunkusumo Jakarta pada kurun waktu tersebut.* ***Hasil:*** *Didapatkan 21 pasien menjalani tindakan retroperitoneoskopi dengan proporsi laki-laki 9 orang (42.85%) dan perempuan 11 orang (57.14%). Rerata usia pasien adalah 38.95 + 21.88 tahun. Berdasarkan diagnosisnya fungsi ginjal 5 (23.8%), batu ureter 5 (23.8%), kista ginjal 3 (14.3%), PUJO 2 (9.5%), double collecting system 3 (14.3%), tumor ginjal 1 (4.8%), tumor ureter 1 (4.8%), dan divertikel ginjal 1 (4.8%). Berdasarkan jenis tindakannya retroperitoneoskopi ureterolitotomi 5 (23.8%), nefrektomi 3 (14.3%), nefroureterektomi 3 (14.3%), unroofing kista ginjal 3 (14.3%), heminefrektomi 3 (14.3%), pyeloplasti 2 (9.5%), parsial nefrektomi 1 (4.8%), dan koagulasi divertikel 1 (4.8%). Durasi operasi 178.81 + 55.72 menit dan lama rawat 8.05 + 4.4. Komplikasi pendarahan 98 + 69.47 cc, infeksi luka operasi 0 (0%), perforasi peritoneum 1 (4.76%), konversi bedah terbuka 2 (9.52%), dan konversi transperitoneal 1 (4.76%).* ***Simpulan:*** *Pada penelitian ini, jumlah tindakan retroperitoneoskopi masih sedikit dibandingkan studi di luar negeri. Karakteristik demografinya bervariasi dibandingkan studi di luar negeri. Durasi operasi memiliki hasil yang relatif sama dengan studi lain sedangkan untuk lama rawat pada studi ini lebih panjang dari studi lain. Konversi bedah terbuka memiliki angka yang lebih tinggi, sedangkan untuk komplikasi yang lain relatif sama.*

Kata kunci: *Laparoskopi, retroperitoneal, retroperitoneoskopi, RSUPN Cipto Mangunkusumo.*

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INTRODUCTION

Laparoscopic surgery was performed in many urology procedures. Laparoscopic approach was first introduced via transperitoneal access. A lot of studies analyze that the outcomes and advantages of laparoscopic overtook open approach, but risks of severe complications such as colon injury and vascular injury were still possible with transperitoneal access.[1,2]

Later on, laparoscopic surgery with retroperitoneal access was invented, which aims to decrease the risk of complications. Retroperitoneoscopic approach was used on several procedures like pelvic lymph node dissection, ureterolithotomy, bladder neck suspension, and nephrectomy.[1] Several studies supported this retroperitoneal approach while other against it. Freiha et al said that open pelvic lymph node dissection was less morbid and more tolerable than laparoscopic was.[2]

The trial to use retroperitoneoscopy procedure was hampered by inadequate distention of retroperitoneal cavity. Attachment of peritoneum to the body by fibrous tissue limits the retroperitoneal cavity insuflation ability.[1,3,4] This limitation was solved by using balloon to separate the adhesion between tissue, and then the distended cavity was maintained by low pressure insuflation.

There are several technical advantages of retroperitoneal approach, such as; less visceral and vascular injury; direct visualization of Cooper Ligament and iliac vein-artery; less ileal obstruction; easier urinoma and hematoma solving; and less rate of herniation.[1]

In treatment of urolithiasis, laparoscopic ureterolithotomy has become an option to treat proximal and medial ureteral stone, ureter stone which failed to remove after Extracorporeal Shock Wave Lithotripsy (ESWL) and endourology procedure, anatomical abnormalities, obesity comorbidity, and nephrectomy nonfunctional kidney caused by stone.[5,6]

Compared to open surgery, laparoscopy have less post operative morbidity, shorter length of stay, and better cosmetic effect.[7] Another benefit from laparoscopic ureterolithotomy is the chance to remove all stones in single operation, so it will be less expensive and shorter operating time.[8]

Transperitoneal laparoscopic ureterolithotomy for proximal and medial ureter stone correlate with higher pain scale, ileal obstruction, and longer length of stays compared to retroperitoneoscopy.[9,10] Stone free rate of 100% is also one of the advantages of retroperitoneoscopy.[7,11]

Retroperitoneoscopy can also be applied in nephrectomy procedures. Retroperitoneoscopy is preferred for cases whose patients had previous history of abdominal surgery in order to avoid complication.[12] Retroperitoneoscopy is preferred over transperitoneal laparoscopy because of its less intraperitoneal organ injury and safe approach to kidney and its artery-vein. Mean operating time and blood loss in nephrectomy retroperitoneoscopy were twice as good as transperitoneal laparoscopy.[13,14]

Retroperitoneoscopy can also be applied in pyeloplasty procedures for PUJO cases. The first case of retroperitoneoscopic pyelopasty was introduced by Jastchek et al. in late 1996.[15] Abuanz et al, reported that transperitoneal laparoscopic pyeloplasty had shorter operating time and less rate of open surgery conversion than retroperitoneal, while intraoperative complication, post operative complication and duration of hospitalization were similar.[16]

OBJECTIVE

The aim of this study was to evaluate the results of initial experiences in retroperitoneoscopy procedures at Cipto Mangunkusumo Hospital, Jakarta. Meanwhile, we also wanted to know the outcomes and complications of retroperitoneoscopy. The benefit of this study was to give illustrations about the results in retroperitoneoscopy surgery, that provide complications rate, and as a basic data to conduct more specific studies in the future.

MATERIAL & METHOD

This was a descriptive study with cross-sectional design. Data was taken from Medical Record of Department of Urology, Cipto Mangunkusumo General Hospital between March 2013 until February 2014. Subjects of the study were all urology patients who underwent retroperitoneoscopy procedures. A total sampling method was preferred.

RESULTS

Numbers of total patients who had retroperioneoscopy surgery in Department of Urology, Cipto Mangunkusumo General Hospital

Jakarta, between February 2013 until March 2014 were 21 patients. Mean age was 38.95 + 21.88 years old with median 49 years old. The youngest subject was 1 year old, operated because of PUJO, while the oldest one was 71 years old, operated because of renal tumor. Subjects consist of 9 (42.85%) males and 12 (57.14%) females.

Table 1. Types of cases of retroperitoneoscopy.

Cases	n (%)
Ureteral stone	5 (23.8)
Renal tumor	1 (4.8)
Ureteral tumor	1 (4.8)
Renal Cyst	3 (14.3)
PUJO	2 (9.5)
Double collecting system	3 (14.3)
Renal diverticle	1 (4.8)
Nonfunctional renal	5 (23.8)

Table 2 shows types of procedures that were done via retroperitoneoscopic approach and their operating time and length of stay. Retroperitoneoscopy surgery total mean operating time was 178.81 + 55.72 minutes. The fastest operation was renal cyst unroofing while the longest one was pyelopasty of PUJO. Total mean length of stay was 8.05 + 4.4 days. The range of length of stay varied from cases depending on the cases and the complications factors.

Mean of blood loss of all procedures was 98 + 69.47 cc with median 60 cc (50-300). The highest rate of intraoperative bleeding was nephroureterectomy surgery of ureteral tumor of which was 300 cc. There was no wound operation infection in this study. We have 1 case (4.76%) of peritoneal perforation of which was then converted into transperitoneal laparoscopy surgery in ureter stone. Open surgery conversion rate was 2 (9.52%) of which were PUJO cases.

DISCUSSION

Laparoscopy technique slowly overtakes the open surgery technique. This is because, in general, laparoscopic procedures have less morbidity and shorter length of stay than open surgery procedures have.[1] Laparoscopy was first introduced via transperitoneal approach. Aimed to reduce visceral injury and vascular injury,

Table 2. Proportion of various types of procedures of retroperitoneoscopy.

Kind of Procedure	n (%)	Operating time (mean ± SD) minutes	Length of Hospitalization (mean ± SD) days
Nephrectomy	3 (14.3)	193.33 ± 51.32	11 ± 6.25
Heminephrectomy	3 (14.3)	220 ± 34.61	7
Partial Nephrectomy	1 (4.8)	180	6
Nephroureterectomy	3 (14.3)	163.33 ± 55.07	6 ± 2
Ureterolithotomy	5 (23.8)	193 ± 19.8	10 ± 6.75
Cyst Unroofing	3 (14.3)	86.67 ± 5.77	5.33 ± 0.58
Pyeloplasty	2 (9.5)	250 ± 14.14	6
Diverticle coagulation	1 (4.8)	120	11

Table 3. Complication of retroperitoneoscopy surgery.

Complication	Mean ± SD	Median (min-max)	n (%)
Bleeding	98.1 ± 69.47	60 (50 – 300)	
Wound operation infection			0 (0)
Peritoneal perforation			1 (4.76)
Open surgery conversion			2 (9.52)
Transperitoneal conversion			1 (4.76)

retroperitoneal approach is developed. Approach preference is operator dependent, based on the operator skill.[5]

In the Department of Urology, retroperitoneoscopy has been established since 2013. Until February 2014, retroperitoneoscopy was performed in 21 cases. In China, retroperitoneoscopy was first introduced in 2006 with total number of cases until 2012 around 3-4 times more than this study.[11] Meanwhile, in European country retroperitoneoscopy was first introduced more than several year before.[9,16]

Mean age of patients was 38.95 + 21.88 years old. This result is different from another study abroad. Some studies have mean age of > 60 years old.[7,9] While others have mean age 40 years old, similar to this study.[11,16]

Cases that can be treated by retroperitoneoscopy in Cipto Mangunkusumo Hospital are stones, either kidney or ureteral, nonfunctional kidney, renal cyst, both ureteral and renal tumor, congenital anomalies, such as PUJO, double collecting system, and renal diverticle. Indications of retroperitoneoscopy are intraperitoneal organ adhesiveness caused by previous abdominal surgery or peritonitis; procedure that have a risk of urinary extravasation such as, ureterolithotomy and pyeloplasty; and procedure that need smaller exposure such as renal biopsy.[1]

Mean operating time was 178.85 + 57.167 minutes, similar with studies whose conducted by Desai et al. (150 minutes) and Abuanz et al. (171 minutes).[14,16] Meanwhile Negoro et al. has a shorter operating time (85 minutes).[13] This significant differences is caused by variation of cases in this study while Negoro et al. only analyze nephrectomy retroperitoneoscopy. In other side, in this study we counted the operating time until closure of wound incision while Negoro et al. counted until renal artery clamped.

In this study, renal diverticle was only treated by coagulation because intraoperative operator did not find any diverticle. Patient had history of previous DJ stent operation 3 months ago. Presence of diverticle was confirmed by retrograde pyelography (RPG) post operatively.

Mean Length of stay was 8.05 + 4.4 days, ranging from 4 to 21 days. While in another study length of hospitalization was shorter, 2 days.[14] The difference in mean and range of length of stay was solely caused by variabilities of cases in this study.

Complications were associated with types of retroperitoneoscopic procedure itself. Major complication of retroperitoneoscopy ureterolithotomy was urethral stricture. In pyeloplasty retroperitoneoscopy, possible complications are anastomosis leakage, pyelonephritis, and blood coagulation.16 In nephrectomy retroperitoneoscopy, possible complication are artery-vein injury, release of arterial clamp, and ileal obstruction.[3,17] Mean total bleeding rate intraoperative in this study was 98 + 69.47 cc. This finding is similar with study conducted by Qin, et al.[11] Meanwhile, another studies had a mean bleeding rate 240-280 cc.[13,14]

There are two cases which were converted into open surgery. This conversion was performed in two cases of PUJO. The cause of this conversion in first PUJO case was ureteral adhesions to its surrounding tissue causing difficulties to identify kidney and ureter. While in the second case, laparoscopic device was inserted into wrong cavity, which was cavity of retroperitoneal muscle. Other studies have less rate of conversion (2,9%), which was caused by fibrosis of ureters surrounding tissues.[16] One case was converted into laparoscopic transperitoneal access because of unrelaxed abdominal wall as a result of inadequate muscle relaxant. In follow up periods there were no wound operation infection.

CONCLUSION

Total number of retroperitoneoscopy surgery cases in Cipto Mangunkusumo General Hospital Jakarta still less than others abroad. In this study, demographic characteristic showed variety than other study. Compared to other studies, the operating time was comparable but the length of stay was longer. We had higher open surgery conversion rate, while another complication was relatively the same.

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