PRELIMINARY REPORT: LAPAROSCOPIC RADICAL PROSTATECTOMY IN JAKARTA

[1]Mohammad Johan, [1]Chaidir A. Mochtar, [1]Rainy Umbas.

[1]Department of Urology, Faculty of Medicine/Indonesia University, Cipto Mangunkusumo Hospital, Jakarta.

ABSTRACT

Objective: *To report initial experience of laparoscopic radical prostatectomy (LRP) in Jakarta and evaluate the functional and oncology outcome.* ***Material & Method:*** *Between June 2007 until September 2008, we had done 9 times LRP surgery. All data is retrospectively taken and divided in three groups, i.e. pre-operative data (patient demography, pre-operative PSA, prostate volume, Gleason Score, clinical and functional staging), intra-operative data (intra-operative complication, conversion to open surgery, bleeding volume, and operating time), and post-operative data (post-operative complication, duration of urine catheter usage, duration of hospitalization, functional and oncology status).* ***Results:*** *Among nine subjects who underwent LRP, five subjects (55,55%) did not converted into open surgery. There are 2 subjects who gain their sexual potency and urine continence in one year post op. Only one subject is proven without biochemical failure in 1 year.* ***Conclusion:*** *We confirmed that radical prostatectomy can be performed with transperitoneal laparoscopic technique by a team that has been experienced in laparoscopy.*

Keywords: *Laparoscopic radical prostatectomy, functional result, oncological result.*

ABSTRAK

Tujuan Penelitian: *Melaporkan hasil pengalaman laparoscopic radical prostatectomy (LRP) di Jakarta dan mengevaluasi fungsi dan hasil onkologi.* ***Bahan & Cara:*** *Antara bulan Juni 2007 sampai September 2008, kami telah melakukan sembilan kali operasi LRP. Semua data diambil secara retrospektif dan dibagi dalam 3 kelompok, yaitu data pre-operatif (demografi pasien, pre-operatif PSA, volume prostat, Gleason score, klinikal dan fungsi staging), data intra-operatif (komplikasi intra-operatif, konversi pembedahan, volume pendarahan, dan lama operasi), dan data post-operatif (komplikasi post-operatif, durasi penggunaan kateter, durasi lama di Rumah Sakit, fungsi dan status onkologi).* ***Hasil penelitian:*** *Diantara sembilan pasien yang dilakukan LRP, lima pasien (55,55%) tidak dilakukan pembedahan. Didapatkan 2 pasien yang mendapatkan potensi seksual mereka dan proses miksi dalam satu tahun post-op. Hanya satu pasien yang terbukti tanpa kegagalan biokimia dalam satu tahun.* ***Simpulan:*** *Kami membuktikan bahwa radical prostatectomy dapat dilakukan dengan menggunakan teknik transperitoneal laparoscopic oleh tim yang berpengalaman di bidang laparoskopi.*

Kata kunci: *Laparoscopic radical prostatectomy, hasil fungsional, hasil onkologi.*

Correspondence: Mohammad Johan, c/o: Department of Urology, Faculty of Medicine/Universitas Indonesia, Cipto Mangunkusumo Hospital, Jl. Diponegoro No. 71, Jakarta 10430. Phone: 021-3152892, 3923631, 3923632. Mobile phone: 081 317981748.

INTRODUCTION

Radical prostatectomy is a standard therapy for localized prostate cancer. For a man with localized prostate cancer and has life expectancy 10 years or more, radical prostatectomy is the best therapy to eradicate the disease.[1,2]

A century ago, Hugh Hampton Young was the first man who did open prostatectomy for prostate cancer trans perineal access.[3] In 1947, Millin reported retropubical prostatectomy technique.[4,5] Although it is effective to cure prostate cancer, but retropubic radical prostatectomy (RRP) has a significant morbidity, such as intraoperative

massive bleeding, urine incontinence, and post-operative erectile dysfunction. In the late 70's and early 80's, some studies were done in fetal and adult cadaver and gave information about detail anatomy peri-prostate, especially dorsal venous complex,[6] neurovascular bundle,[7] and urethral sphingter.[8] The result of these studies have a significant effect in decreasing morbidity in RRP. Morbidity and functional sequalae of this surgery needs to be considered in choosing management of prostate cancer.[9]

In order to decrease the morbidity of RRP, in 1997 Schuessler et al (1997) invented minimal invasive technique in prostate cancer management, i.e. laparoscopic radical prostatectomy (LRP).[10] Laparoscopic surgery is designed not only to decrease the morbidity in abdominal surgery compared to open surgery, but also to increase the surgery precision by giving better visualization of the surgery field by magnification.

For a radical prostatectomy which has narrow surgery field in pelvic cavity, laparoscopy technique is not only useful to increase post-operative comfort, but also to preserve the periprostate vascular, muscle, and neurovascular structure better.

In Jakarta, LRP has been done since June 2007 and the most commonly done is transperitoneal technique. In transperitoneal technique, the surgery field is wider compared to extraperitoneal technique so that instrument manipulation is easier to be done. Transperitoneal access also provides direct access to seminale vesicle after incision in the posterior side of vesical area. This paper will report initial experience of LRP in Jakarta and evaluate the functional and oncology outcome.

OBJECTIVE

To report initial experience of laparoscopic radical prostatectomy (LRP) in Jakarta and evaluate the functional and oncology outcome.

MATERIAL & METHOD

We collected data from all subjects who had undergone LRP. Between June 2007 until September 2008, we had done 9 times LRP surgery in clinically diagnosed localized prostate cancer patient (cT1-2, NxM0). Surgery was done in 4 hospitals in Jakarta, i.e. Gatot Soebroto Central Army Hospital, Cipto Mangunkusumo Hospital, Medistra, and MMC by urologist (CAM) and assisted by laparoscopic surgery team from Urology RSCM. In general, we started LRP with transperitoneal technique.

All data is retrospectively taken and divided in three groups, i.e. pre-operative data, intra-operative, and post-operative data. Pre-operative data includes patient demography, pre-operative PSA, prostate volume, Gleason Score, clinical and functional staging (sexual potency and urine continence). Intra-operative data includes intra-operative complication, conversion to open surgery and the reason of the conversion, bleeding volume, and duration of the surgery. Postoperative data includes complication, duration of urine catheter usage, duration of hospitalization, functional and oncology status. Functional result refers to sexual potency and urine continence post surgery. Oncology result is evaluated by staging tumor and lymph node involvement by TNM 2002 classification, tumor-free incision margin, GS, PSA, and biochemical failure post LRP. Gleason score is divided in 3 groups, i.e. GS < 7, $= 7$, and > 7. Biochemical failure is defined by PSA serum $> 0,2$ ng/mL in two consecutive examination post LRP.1

RESULTS

Patient age mean is $59 \pm 5,96$. Body mass index mean is $25,22 \pm 4,82$. Pre-operative PSA median is 15,92 ng/mL (mean 20,98; range 0,48-89,6). Prostate volume mean is $32,05$ cc $\pm 9,57$. Clinical staging based on TNM 2002 classification is 2 subjects with stage 1b, 5 subjects with stage 1c, and 2 subjects with stage 2a. Pre-operative Gleason score mean from the last 8 patients is $7,12 \pm 1,96$. First patient was not examined for Gleason Score. Seven subjects underwent transrectal biopsy, while the other two already had histopathology data from TURP. Three subjects already had hormonal therapy before LRP. Sexual potency of all subjects before surgery is normal and one patient already had urine incontinence before surgery. Table 1 shows baseline characteristic data of all subjects.Among nine subjects who underwent LRP (table 1), five subjects (55,55%) did not converted into open surgery. Second subject were initially underwent extra-peritoneal LRP, then converted into transperitoneal technique because the subject is obese. The surgery went well and did not need to be converted to open surgery. Pelvic lymphadenectomy were done to all

Table 1. Baseline characteristic data.

Variable	Results
Age (n = 9)	Mean 59 ± 5,96
BMI (n = 8)	Mean 25,22 ± 4,82
Pre-operative PSA (n = 9)	Median 15,92 ng/mL (mean 20,98; range 0,48-89,6)
Prostate Volume (n = 9)	Mean 32,05 cc ± 9,57
Pre-operative Gleason Score (n = 8)	
< 7	4 (50%)
> 7	4 (50%)
Clinical staging (n = 9)	
cT1b	2 (22,22%)
cT1c	5 (55,55%)
cT2a	2 (22,22%)
Pre-operative continence	8 (89%)
Pre-operative potency	9 (100%)

Table 2. Intra-operative data.

Variable	Results
Open surgery conversion (n=9)	4 (44,44%)
Duration of surgery	
Without conversion	Mean 600 minutes ± 147,48
With and without conversion	Mean 575,71 minutes ± 128,85
Intra-operative bleeding	
Without conversion	Mean 825 cc ± 221,74
With and without conversion	Median 1000 cc (mean 2157,14; range 500-7500)

Table 3. Post-operative data.

Variable	Results
Duration of hospitalization	
Without conversion	Mean 8,80 days ± 0,84
With and without conversion	Median 9 days (mean 12,33; range 8-37)
Catheter usage	
Without conversion	Mean 18 days ± 10
With and without conversion	Median 18 days (mean 17 86; range 8-28)

subjects.

Conversion to open surgery were done in 4 subjects (44,44%). Two subjects are patients who has already undergone TURP and hormonal therapy, the other two has not undergone both. One of the last group had massive intra-operative bleeding and we converted the technique into RPP and we used packing. Three days after the surgery, the packing were released and we did vesico-urethral anastomosis. Table 2 shows duration of the surgery and the amount of intra operative bleeding.

In post-operative, all patients were admitted to ICU (table 3). No patients died nor had complications such as pulmonary emboli, infections, or gastrointestinal complications. Table 3 shows duration of hospitalization and urine catheter usage.

Table 4. Oncology and functional data.

Stage		Total (%)	Positive margin incision (%)	Gleason Score				1 year without biochemical failure (%)	Gain potency in 1 year	Gain continence in 1 year
pT	pN			< 7	7	> 7	nd*			
0	0	2 (22,22%)	0 (0%)	0	0	0	0	2 (100%)	0	0
2a	0	1 (11,11%)	0 (0%)	0	1	0	0	0 (0%)	1	1
2b	0	1 (11,11%)	nd*	0	0	1	0	nd*	1	1
2c	0	2 (22,22%)	0 (0%)	1	0	1	0	1 (50%)	0	0
3b	0	3 (33,33%)	2 (66,67%)	0	1	1	1	0 (0%)	0	0

*nd: no data

Among all subjects, there are 2 subjects who gain their sexual potency and urine continence in one year (table 4). Both of them are the last two subjects.

Hisopathological analysis from radical prostatectomy specimen shows 2 subjects are stage T0; 1 subject is stage 2a; 1 subject is stage 2b; 2 subjects are 2c; and 3 subjects are 3b. Positive margin incision is found in 2 subjects (both are pT3b). One subject does not have margin incision data. Three subjects already have seminal vesica; 5 cases have no invasion to vesica; and 1 subject does not have the data. Lymph node analysis shows negative result in all subjects (N0). Among all patients who have proven cancer from prostatectomy specimen analysis, only one subject is proven without biochemical failure in 1 year.

DISCUSSION

Laparoscopic radical prostatectomy is one of the techniques of choice which designed to attempt oncological result as good as conventional technique and hopefully can reduce surgery morbidity. Schuessler et al were the first reporting 9 case-series who underwent transperitoneal LRP in three hospitals within 44 months period. The report concluded that LRP is not an effective alternative technique for RPP.[10] After some evaluation in surgery technique and technology, LRP has rapidly developed both in Europe and United States. Laparoscopic radical prostatectomy gives satisfying result in local control and preventing PSA failure.[11] Systematical review in radical prostate surgery shows that LRP is only significant in reducing intra-operative bleeding and blood transfusion need compared to RRP. In number of tumor-free margin incision, continence, and erectile dysfunction, both techniques show no significant difference. Hence, a lot of data is still needed to prove the excellence of LRP in achieving oncology and functional result.[12]

We had done LRP 9 times in 4 hospitals within 13 months period. In general, we started LRP with transperitoneal technique. The reason for this is we are trained to do LRP with this technique. Besides, the surgical field is wider in transperitoneal compared to extraperitoneal, so that instrument manipulation is easier to be done. Unlike the Schuessler technique which anastomose vesico-urethra via transvesica with interrupted knot, we anastomose vesico-urethra extravesica with Van Velthoven continuous knot technique (Picture. 1).[13] Vesico-urethra anastomosis with continuous know is preferred because it is simpler and reducing the length of surgery. This technique does not need mucosal eversion.

Intra-operative complication which feared the most is intra-operative bleeding. Patients who bleed more than 1000 cc are converted into open surgery. There are 4 patients who experienced it, and half are patients who had underwent TURP and received hormonal therapy before.

Mean of surgery duration in patients who underwent pure LRP is 600 minutes ± 147,48. This is more or less twice the duration we need for RPP. This is almost the same with LRP technique which reported by Schluessler in his initial experience, i.e. mean more than 9 hours (range 8,5-11). This extended length is caused by there is no experienced mentor who directly assisting neither Schluessler nor us.

Post-operative, all subjects were admitted into ICU at least for 1 day, including subjects who

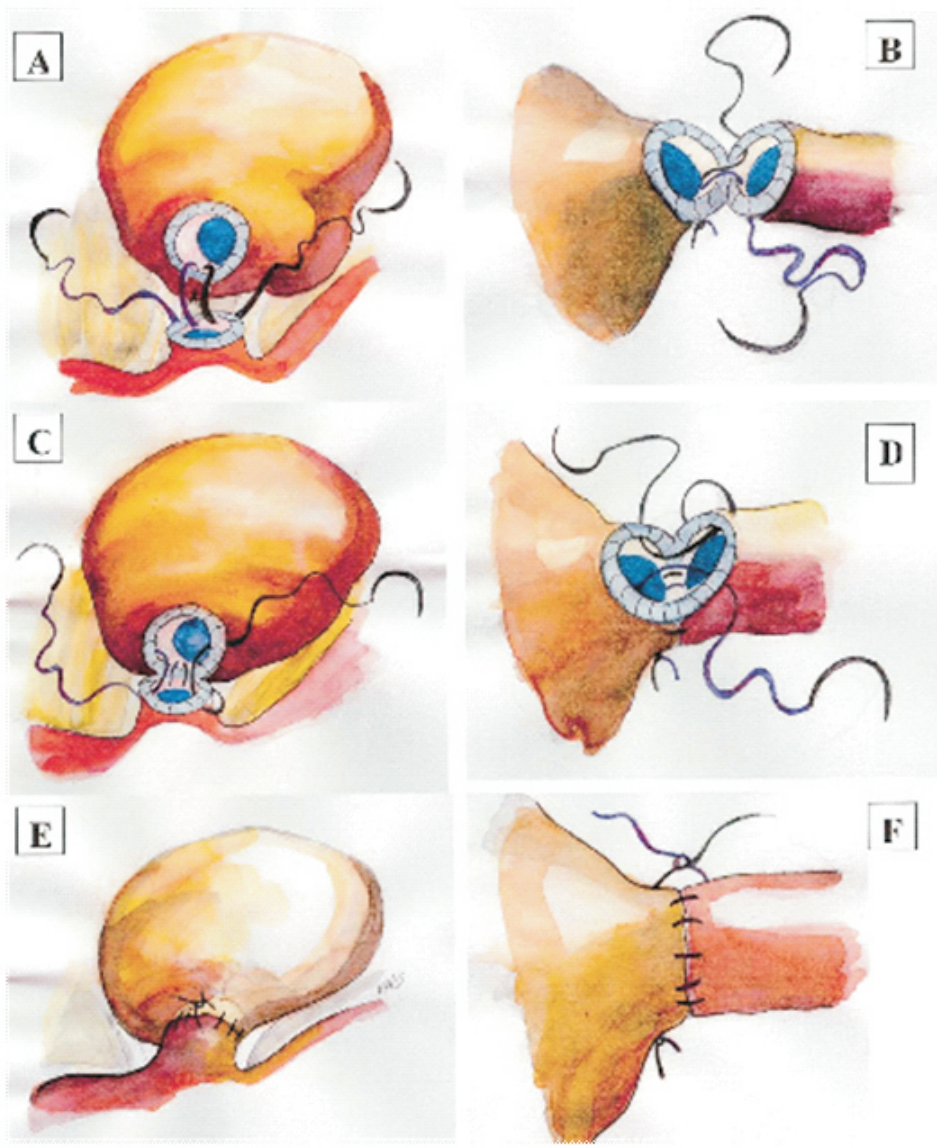

Figure 1. Van Velthoven technic illustration.

did not have any intra-operative surgery. This is caused by long anesthesia usage (> 6 hours) and because LRP is a relatively new technique in our institution.

Within one year period, two subjects regained their sexual potency and urine continence. Those are our last two patients. We have not applied neural preservation technique and this might be the cause of the low number of post LRP sexual potency.

In oncology result, 2 subjects had tumor-free incision margin and one of those has proven recurrent-PSA free in the first one year. This subject is the only subject we have who is proven recurrent-PSA free in the first year.

In general, our LRP experience cannot yet be compared to RRP case series because our case is too few. From our initial experience, we decided to do more RRP technique before back LRP.

CONCLUSION

Based on our LRP initial experience in 9 subjects, we confirmed that radical prostatectomy can be performed with transperitoneal laparoscopic technique by a team that has been experienced in laparoscopy.

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