

FRESH GRADUATE UROLOGIST IN EASTERN INDONESIA: FIRST YEAR SURGERY EXPERIENCE

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ABSTRACT

Objective: In present days, endourology is the hallmark of urology, including in developing countries. This study reviews the surgical experiences of a urology practitioner in the first year of his practice in the underdeveloped province in Indonesia. **Material & Methods:** This research is a descriptive study that retrieval patients data from the medical record during June 2018 - May 2019. **Results:** Total of 401 operations were obtained. There were 328 male (81.8%) and 73 female (18.2%) with the average of patients age were 52+17.77 years old. The most common diagnoses were BPH 113 cases (28.2%), bladder stone 83 cases (20.7%), and ureteral stone 52 cases (13%). The most common surgical procedures performed were TURP 120 operations (29.9%), Ureterorenoscopy (URS) 64 operations (16%), and Vesicolithotripsy 58 operations (14.5%). The upper tract procedures were 84 operations (20.9%), mainly URS 64 operations (16%). Whereas the lower procedures were 317 operations (79.1%) mainly TURP 120 operations (29.9%). The complications were bleeding post-TURP 5 cases which require blood clot evacuation (1.2%), bleeding post open nephrolithotomy 1 case which requires blood transfusion (0.2%), and TURP syndrome 1 case (0.2%) with mortality 2 patient (0.4%). All kidney stones were handled by open surgery due to lack of PCNL and ESWL set devices. **Conclusion:** First year urologist who are interested in serving in such areas may benefit from prioritizing the availability of upper and lower set to performed basic standard care for surgical urology without leaving the hallmark of urology.

Keywords: Endourology, urology in rural Indonesia.

ABSTRAK

Tujuan: Saat ini, endourologi adalah ciri khas urologi, termasuk di negara-negara berkembang. Studi ini mengkaji pengalaman bedah seorang praktisi urologi pada tahun pertama praktiknya di provinsi terpencil di Indonesia. **Bahan & Cara:** Penelitian ini adalah penelitian deskriptif yang mengambil data pasien dari rekam medis selama Juni 2018 - Mei 2019. **Hasil:** Total 401 operasi diperoleh. Terdapat 328 laki-laki (81.8%) dan 73 perempuan (18.2%) dengan usia pasien rata-rata 52 + 17.77 tahun. Diagnosis yang paling umum adalah BPH sebanyak 113 kasus (28.2%), batu kandung kemih 83 kasus (20.7%), dan batu ureter 52 kasus (13%). Prosedur bedah yang paling umum dilakukan adalah TURP 120 (29.9%), operasi Ureterorenoscopy (URS) 64 (16%), dan Vesicolithotripsy 58 (14.5%). Prosedur saluran kemih atas sebanyak 84 operasi (20.9%), terutama operasi URS 64 (16%). Sedangkan prosedur saluran kemih bawah sebanyak 317 operasi (79.1%) terutama TURP 120 (29.9%). Terdapat komplikasi berupa perdarahan pasca TURP 5 kasus yang memerlukan clot evacuation (1.2%), perdarahan pasca nefrolitotomi 1 kasus yang membutuhkan transfusi darah (0.2%) dan sindrom TURP 1 kasus (0.2%) dengan mortalitas 2 pasien (0.4%). Semua batu ginjal ditangani dengan operasi terbuka karena kurangnya perangkat PCNL dan ESWL. **Simpulan:** Urolog tahun pertama yang tertarik untuk melayani di bidang-bidang tersebut dapat mengambil manfaat dari memprioritaskan ketersediaan set atas dan bawah untuk melakukan perawatan standar dasar untuk urologi bedah tanpa meninggalkan ciri khas urologi.

Kata kunci: Endourologi, urologi di daerah terpencil Indonesia.

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INTRODUCTION

Urology is the branch of medicine and surgery involved with the study, diagnosis, and

treatment of diseases of the genito-urinary tract of the male and the urinary tract of the female.¹ Over the previous few years, Urology has seen drastic modifications. It shifted from an open surgical

specialty to a specialty that embraced endourology methods with enthusiasm.² Endourology is a minimally invasive method accessed through natural body channels such as the urethra, bladder, and ureter to treat disease using small tools.³⁻⁴ With the construction of the "lichleiter" by Philipp Bozzini in 1806 for direct inspection and treatment of the uterus and bladder, the gradual evolution towards the modern endoscopes began. Until 1912, in a 2-month-old kid with a posterior urethral valve, the first ureteroscopic procedure was performed and was later reported in 1929. Since the first report of flexible Ureteroscopy (fURS) by Marshall in 1964, major developmental milestones in the technology of flexible ureteroscopes have led to the current relative ease of clinical application together with a high success rate and low associated morbidity. Endourology remains to evolve so as to achieve better results, but with minimal complication.³⁻⁵

East Nusa Tenggara is a province in the eastern part of Indonesia with a total population of 5.287.302 in 2017. East Nusa Tenggara is the third poorest province in Indonesia with 21.35% of its population living below the poverty line.⁶ East Nusa Tenggara consist of more than 500 islands, subdivided into 21 regencies and Kupang is the capital city where health care services are centered, including urology. There are 50 hospitals in East Nusa Tenggara and 13 of them are located in Kupang.⁷ From 2018 until 2019 two urology practitioners are covering the whole of East Nusa Tenggara. Although there are general surgeons who can perform treatment for urology patients, many cases would still benefit from urologic expertise. As a developing country, healthcare resources in Indonesia are not distributed evenly. Urologists are concentrated in Java Island, and outside Java Island, they are mostly located in province capitals.⁸

In present days, endourology is the hallmark of urology, including in developing countries. The number of urology practitioners in the underdeveloped region in Indonesia is still relatively scarce. Many urological cases such as benign prostatic enlargement and urinary stones have benefited from the minimally invasive or endourology procedure such as transurethral resection or ureterorenoscopy, and lithotripsy. These procedure offers significant advantages over traditional open surgeries, resulting in shorter hospital stays and lower complication rates. These procedures are feasible to be performed in the underdeveloped province including East Nusa Tenggara.

OBJECTIVE

In present days, endourology is the hallmark of urology, including in developing countries. There is no profile of what operations have been carried out in the field of urology due to its recent encounter in East Nusa Tenggara. This study reviews the surgical experiences of a urology practitioner in the first year of his practice in the underdeveloped province in Indonesia.

MATERIAL & METHODS

This research is a descriptive study. Retrieval of patient data was obtained from the medical record during June 2018 - May 2019. The medical records and identity of each patient was kept anonymous.

The data of this study was taken from a single operator, a fresh graduate urologist who work in three hospitals in Kupang, East Nusa Tenggara Province. The lower set consist of cystoscopy set, transurethral resection set, direct vision urethrotomy, and lithotripsy set by Tontarra and STORZ. The upper set consist of ureterorenoscopy and pneumatic lithotriptor by Tontarra.

All patients who underwent surgery by this operator were included in this study. The variables were sex, age groups, diagnosis, surgical approach, location, and complications.

RESULTS

Total of 401 operations was performed from June 2018 to May 2019. There were 328 male (81.8%) and 73 female (18.2%) with the average of patients age were 52+17,77. The youngest was 10 days old and the oldest was 82 years old. The most common diagnoses were benign prostate hyperplasia (BPH) 113 cases (28.2%), bladder stone 83 cases (20.7%), and ureteral stone 52 cases (13%). The most common surgical procedures performed were transurethral resection of prostate (TURP) 120 operations (29.9%), ureterorenoscopy (URS) 64 operations (16%), and vesicolithotripsy 58 operations (14.5%). The upper urinary tract procedures were 84 operations (20.9%), mainly URS 64 operations (16%). Whereas the lower urinary tract procedures were 317 operations (79.1%) mainly TURP with total of 120 operations (29.9%). All kidney stones were handled by open surgery due to lack of PCNL and ESWL set devices.

The complications were bleeding post-TURP 5 cases which require blood clot evacuation

(1.2%), bleeding post open nephrolithotomy 1 case which requires blood transfusion (0.2%), and TURP syndrome 1 case (0.2%) with mortality 2 patient (0.4%).

Several cases of kidney stones, advanced Uro-oncology cases, and advanced reconstructive surgery were referred to as higher care facilities outside East Nusa Tenggara.

Table 1. Total Surgical Procedure.

No	Procedure	N (401)	%
1	TUR-P	120	29.9
	BPH	113	28.2
	Ca Prostate	7	1.7
2	Utercopy	64	16
	Ureterolithotripsy	44	11
	Dilatation of Ureter	20	5
3	Vesicolithotripsy	58	5
4	Removal of DJ Stent	44	11
5	Sachse	28	7
6	Vesicolithotomy	25	6.2
7	Ureterolithotomy	8	2
8	Circumsicion	7	1.7
9	Nefrolithotomy	6	1.5
10	Clot Evacuation	5	1.2
11	Debridement of Fournier Gangrene	5	1.2
12	Repair fistula Vesico Vagina	4	1
13	Eksisi Siliconoma	4	1
14	Open Cystostomy	4	1
15	Pyelolithotomy	3	0.7
16	Urethrolithotripsy	3	0.7
17	Nefrectomy	2	0.5
18	Dorsal Meatotomy	2	0.5
19	Varicocelectomy	2	0.5
20	Biopsi of Ca Penile	2	0.5
21	TURP-BT	1	0.2
22	Inguinal Orchidectomy	1	0.2
23	Orchidopexy UDT	1	0.2
24	Hydrocelectomy	1	0.2
25	Nefrostomy	1	0.2

Table 2. Diagnosis.

No	Diagnosis	N (401)	%
1	BPH	113	28.2
2	Bladder Stone	83	20.7
	Vesicolithotripsy	58	14.5
	Vesicolithotomy	25	6.2
3	Ureteral Stone	52	13
	URS	44	11
	Ureterolithotomy	8	2
4	DJ Stent In Situ	44	11
5	Urethral Stricture	30	7.5
6	Stenosis Ureter	20	5
7	Ca Prostat	7	1.7
8	Phimosis	7	1.7
9	Kidney Stone	7	1.7
10	Clot Retention	5	1.2
11	Fournier Gangrene	5	1.2
12	Fistula Vesico-Vagina	4	1
13	Siliconoma	4	1
14	Pyelum Stone	3	0.7
15	Urethral Stone	3	0.7
16	Meatal Stenosis	2	0.5
17	Varicocelle	2	0.5
18	UPI Stenosis	2	0.5
19	Ca Penis	2	0.5
20	Ca Bladder	1	0.2
21	Ca Testis	1	0.2
22	UDT	1	0.2
23	PUV	1	0.2
24	Urethral Trauma	1	0.2
25	Hidrocelle	1	0.2

Table 3. Surgical Aproach.

No	Endo/open	Procedure	N (401)	%
	Endoscopy		323	80.5
1		TURP	120	29.9
2		URS	64	16
3		Vesicolithotrips	58	14.5
4		Removal of DJ Stenty	44	11
5		Sachse	28	7
6		Clot Evacuation	5	1.2
7		Urethrolithotripsy	3	0.7
8		TUR-BT	1	0.2
	Open Surgery		78	19.5
1		Vesicolithotomy	25	6.2
2		Ureterolithotomy	8	2
3		Circumsicion	7	1.7
4		Nafrolithiasis	6	1.5
5		Debridement Fournier Gangrene	5	1.2
6		Repair Fistula VV	4	1
7		Siliconoma Excision	4	1
8		Open Cystostomy	4	1
9		Pyelolithotomy	3	0.7
10		Nephrectomy	2	0.5
11		Dorsal Meatotomy	2	0.5
12		Varicolectomy	2	0.5
13		Biopsi Ca Penile	2	0.5
14		Inguinal Orchidectomy	1	0.2
15		Orchidopexy UDT	1	0.2
16		Hidrocelectomy	1	0.2
17		Nefrostomy	1	0.2

Table 4. Location.

No	Upper vs Lower urinary tract	N (401)	%
	Upper Tract	84	20.9
1	URS	64	16
2	Ureterolithotomy	8	2
3	Nefrolithotomy	6	1.5
4	Pyelolithotomy	3	0.7
5	Nefrectomy	2	0.5
6	Nefrostomy	1	0.2
	Lower Tract	317	79.1
1	TURP	120	29.9
2	Vesicolithotripsy	58	14.5
3	Removal DJ Stent	44	11
4	Sachse	28	7
5	Vesicolithotomy	25	6.2
6	Circumsicion	7	1.7
7	Clot Evacuation	5	1.2
8	Debridement Fournier	5	1.2
9	Repair Fistula VV	4	1
10	Silicinema Excision	4	1
11	Open Cystostomy	4	1
12	Ureterolithotripsy	3	0.7
13	Dorsal Meatotomy	2	0.5
14	Varicolectomy	2	0.5
15	Biopsi Ca Penile	2	0.5
16	TUR-BT	1	0.2
17	Inguinal Orchidectomy	1	0.2
18	Orchidopexy UDT	1	0.2
19	Hidrocellectomy	1	0.2

DISCUSSION

In this study, the most sex who underwent surgery was found in men. This is because almost one-third of the operations performed are turp surgery in BPH patients. This is also closely related to the age group as well where 156 cases have ages above 60 years. Benign prostatic hyperplasia (BPH) is the most common urological condition, and benign enlargement in men older than 50 years of age is becoming an important issue in general practice owing to the increasing number of aging men.⁹

Based on information from the Krimpen and Baltimore Longitudinal Study of Aging, the prostate volume increases with age suggesting a prostate

development level of 2.0%-2.5% per year in elderly males. Continued prostate growth is a risk factor for LUTS development and increased prostate growth which is associated with benign prostatic enlargement (BPE) and enhanced risk of clinical BPH development, urinary retention, and need of prostate surgery.⁹⁻¹⁰

More operations involve the lower urinary tract. This is related to the number of TURPs obtained by 113 cases of BPH (28.2%) and 7 cases of Ca Prostate (1.7%). This is certainly related to BPH as the second-most cases in the field of urology in Indonesia and as second-most cases in the United States of America after urinary tract infection.^{9,11} Whereas for the most upper urinary tract surgery is

ureterorenoscopy. Ureterorenoscopy is divided into 44 ureterolithotripsy (11%) and 20 cases of ureteral dilatation (5%). Indonesia is included in the calculus belt and contributes to higher urinary stone. In fact, Kupang as the capital city of East Nusa Tenggara, the incidence and prevalence of urinary stone population in Kupang has been noted in tap water consumption.¹²⁻¹³ Most ureteral stenosis was related to urinary stone. Patients with complicated ureteroscopies or severely impacted calculi warrant close follow-up with imaging after stone treatment due to the possibility of rapid renal deterioration from ureteral stenosis formation.¹⁴ Surgery for upper urinary tract stones is only available for the treatment of ureteric stones which used pneumatic lithotripsy. In some cases, ureteral stone below 20 mm and located in the media or distal of the ureter can be done. But in some proximal ureteral stone sometimes underwent open surgery to avoid the possibility of retropulsion stones to the kidney.¹⁵

The most common surgical approach is endourology 323 cases (80.5%) where TURP is the most common procedure. The gold standard surgical indication therapy for BPH is TURP. Transurethral resection of the prostate has been the cornerstone of severe lower urinary tract symptoms or BPH surgical therapy for more than nine decades despite the emergence of new.¹⁶⁻¹⁷

The most common open surgical procedure is vesicolithotomy, as many as 25 procedure (6.2%). It has strong recommendation for using transurethral vesicolithotripsy. However, due to limited equipment, surgeries must be carried out openly which increases the number of perioperative bleeding, longer hospitalizations, greater handling of post pain, and higher risk of infection.¹⁸ The tool that is owned by the researcher for treating bladder stone has 3.5 cm maximum diameter.

The modalities of the tools available for TURP in the hospital studied by the researchers have a monopolar TURP device. Even though TURP is endourology, there is still risk of complications.¹⁷

Hemorrhage is the most frequent complication. Larger glands and resection times of longer than 90 minutes are associated with a higher incidence of bleeding. Bleeding can occur intraoperatively and postoperatively. All patients who dismiss from the inpatient clinic have clear urine 2 days after surgery. Venous bleeding is darker and generally occurs after a period of initial clear irrigant in the postoperative period. Initially, any clot retention should be treated by complete removal of

the clots.¹⁷ As many as 5 patients who experienced to urine retention had to undergo clot evacuation due to re-clotting.

In this research, there is 1 patient who has TURP syndrome. In the AUA cooperative study TUR syndrome occurred in 2% of the patients. Patients with a prostate size larger than 45 g and a resection time longer than 90 minutes are easier to get this complication.^{17,19}

There were 2 mortality cases. The first was infant male with posterior urethral valves. The patient underwent open cystostomy. The second patient was male patient with staghorn stone who underwent bivalve nephrolithotomy. The patient died of sepsis. PUV is the most common cause of bladder outflow obstruction in male infants. The mortality rate in PUV patients has significantly decreased in the last 30 years, from 50% to less than 10% of patients. An incidence of PUV was estimated at 1 in 7.000-8.000 live-births. PUV can be detected during prenatal ultrasound screening when found bilateral hydroureteronephrosis and a distended bladder are suspicious signs of a urethral valve.²⁰ There is no antenatal treatment because the child's mother rarely controls to obstetricians and have never been ultrasound before. After birth, the patient undergo bladder drainage.

CONCLUSION

Benign prostate hyperplasia was the most common diagnosis with TURP was the most common surgical procedures performed in this study. Lower urinary tract procedure was higher than the upper urinary tract procedure with endoscopic surgery was the main surgical procedure.

Urology practitioners are still scarce in many parts of Indonesia, especially in the underdeveloped area. However, initiating urology healthcare service is feasible and many patients can have benefited from it. The first-year urologist who are interested in serving in such areas may benefit from prioritizing the availability of upper and lower set to performed basic standard care for surgical urology without leaving the hallmark of urology.

REFERENCES

1. Gagnon L, Simard A, Tu L. Knowledge about urology in the general population: alarming results. *Canadian Urological Association Journal*. 2013; 3(5): 388.
2. Wright A. Ureteroscopy and stones: Current status and future expectations. *World Journal of*

- Nephrology. 2014; (4): 243.
3. Maciolek K, Best S. History of Optics in Endourology. The History of Technologic Advancements in Urology. 2017. p. 21-35.
4. Al-Naimi A, Alobaidy A, Majzoub A, Amin Ibrahim T. Evaluation of ureteroscopy outcome in a teaching hospital. *Türk Üroloji Dergisi/Turkish Journal of Urology*. 2016; 42(3): 155-161.
5. Alenezi H, Denstedt J. Flexible ureteroscopy: Technological advancements, current indications and outcomes in the treatment of urolithiasis. *Asian Journal of Urology*. 2015; 2(3): 133-141.
6. Public Health Departement Of East Nusa Tenggara. Profil kesehatan tahun 2017 dinas kesehatan provinsi nusa tenggara timur. Kupang: Public health department of East Nusa; 2017.
7. Central Bureau of Statistics. Jumlah Rumah Sakit Menurut Kabupaten/Kota di Provinsi Nusa Tenggara Timur. Kupang: Central Bureau of Statistics; 2017.
8. Raharjo R. Diagnosis and treatment patterns of male lower urinary tract symptoms suggestive of benign prostatic hyperplasia in Murjani General Hospital, Central Kalimantan, Indonesia. *Prostate International*. 2016; 4(2): 65-69.
9. Matondang F, Rahardjo H. Management of male lower urinary tract symptoms suggestive of benign prostatic hyperplasia by general practitioners in Jakarta. *Prostate International*. 2014; 2(2): 97-103.
10. Lim K. Epidemiology of clinical benign prostatic hyperplasia. *Asian Journal of Urology*. 2017; 4(3): 148-151.
11. Vuichoud C, Loughlin K. Benign prostatic hyperplasia: epidemiology, economics and evaluation. *The Canadian Journal of Urology, International Supplement*. 2015; 22(51): 1-6.
12. Alatab S, Pourmand G, Howairis M, Buchhoiz N, Najafi I, Pourmand M et al. National Profiles of Urinary Calculi: A Comparison Between Developing and Developed Worlds. *Iranian Journal of Kidney Diseases*. 2016; 10(2): 51-52
13. Sutojo B, Hutaaruk E, Yuri P. Prevalence of urolithiasis in rural Kupang, Indonesia. 41th ASMIUA. Padang: ASMIUA; 2018.
14. Tran H, Arsovska O, Paterson R, Chew B. Evaluation of risk factors and treatment options in patients with ureteral stricture disease at a single institution. *Canadian Urological Association Journal*. 2015; 9(11-12): 921.
15. Reddy T, Assimos D. Optimizing Stone-free Rates With Ureteroscopy. *Reviews in Urology*. 2015; 17(3): 160-164.
16. Gravas S, Cornu J, Gacci M, Gratzke C, Herrmann T, Mamaulakis C et al. Management of Non-Neurogenic Male Lower Urinary Tract Symptoms (LUTS), incl. Benign Prostatic Obstruction (BPO). *European Association of Urology* 2019; 2019.
17. Agrawal M, Mishra D. Monopolar Transurethral Resection of Prostate. In: Smith A, Preminger G, Kavoussi L, Badlani G, ed. by. *Smith's Textbook of Endourology*. 4th ed. UK: Wiley Blackwell; 2019.
18. Turk C, Skolarikos A, Donaldson J, Neisius A, Petrik A, Seitz C et al. Bladder Stones. *European Association of Urology* 2019. 2019.
19. Fitzpatrick J. Minimally invasive and endoscopic management of Benign Prostatic Hyperplasia. In: Wein A, Kavoussi L, Novick A, Patrtn A, Peters C, ed. by. *Campbell Walsh Urology Expert Consult*. 10th ed. USA: Elsevier; 2012. p. 2655.
20. Radmayr C, Bogaert G, Dogan H, Kocvara R, Nijman J, Stein R et al. Paediatric Urology. *European Association of Urology Guidelines*. 2019.