

IS NEOBLADDER SAFE FOR HIGH GRADE BLADDER CANCER PATIENTS?: EVALUATION OF RADICAL CYSTECTOMY COMPLICATIONS AND ILEAL NEOBLADDER RECONSTRUCTION IN AMC KARIADI GENERAL HOSPITAL

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ABSTRACT

Objective: The purpose of this study was to evaluate complications of ileal neobladder reconstruction in high grade bladder cancer patients. **Material & Methods:** The descriptive study included 12 patients who underwent radical cystectomy and bladder reconstruction with ileal neobladder in Academic Medical Center Kariadi General Hospital Semarang from 2009 until 2016. Base data recorded retrospectively and followed at outpatient clinic. The complications were evaluated from perioperative care, postoperative care, and outpatients clinic. Clavien Dindo classification use to rank complication. **Results:** The average ages distribution range from 39-70 year. There were 2 patients with comorbid of renal failure, 11 patients with history of TUR and 1 patient underwent adjuvant external radiation. There were 11 patients in high grade bladder cancer ($\geq T3$) and 1 patient with T2. Of the 8 patients underwent orthotopic neobladder procedure and 3 patients underwent cutaneous w-shape procedure. From the histopathology results, 10 patients with high grade transitional cell carcinoma, and 2 patients with invasive urothelial cell carcinoma. There were complication caused by neobladder-related of 1 patient with urinary leakage from ureteroileal anastomose, 1 patient with peritonitis caused by ileo-ileal anastomose leakage, and 1 patients with bowel necrosis caused by internal hernia who need re-operation. All neobladder related complication were 4/33%. From neobladder nonrelated of 1 patient with chronic renal disease and sepsis, and 1 patient with acute renal failure and hyperchlor metabolic acidosis. All of neobladder related complications described above end with mortality (2/16%), except the urinary leakage. **Conclusion:** Our complication and mortality radical cystectomy - neobladder related rate were 33% and 16% compare with literature show 28-64% and 5.1-8.1%, respectively. Patients selection ($< T3$, no comorbid) and experience according high volume operation can reduced the mortality rate.

Keywords: Bladder cancer, orthotopic neobladder, radical cystectomy.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk mengevaluasi komplikasi operasi rekonstruksi ileal neobladder pada pasien kanker kandung kemih stadium tinggi. **Bahan & Cara:** Penelitian deskriptif ini melibatkan 12 pasien yang dilakukan operasi radikal sistektomi dengan rekonstruksi ileal neobladder di RSUP Dr. Kariadi Semarang dari tahun 2009 sampai 2016. Data dasar dikumpulkan secara retrospektif kemudian diikuti di poliklinik. Komplikasi dievaluasi dari perawatan perioperatif, perawatan pasca operasi dan klinik rawat jalan. Klasifikasi Clavien Dindo digunakan untuk menilai komplikasi. **Hasil:** Rerata umur berkisar antara 39-70 tahun. Ada 2 pasien dengan komorbiditas gagal ginjal, 11 pasien dengan riwayat TUR dan 1 pasien menjalani ajuvan radiasi eksternal. Ada 11 pasien kanker kandung kemih high grade ($\geq T3$) dan 1 pasien dengan T2. Dari 8 pasien menjalani prosedur neobladder orthotopik dan 3 pasien menjalani prosedur neobladder w-shape. Dari hasil histopatologis 10 pasien dengan karsinoma sel transisional histologi derajat buruk, dan 2 pasien dengan karsinoma sel urothelial invasif. Komplikasi yang berhubungan neobladder yaitu 1 pasien dengan kebocoran urin di anastomosis ureteroileal, 1 pasien dengan peritonitis akibat kebocoran anastomose ileo-ileum, dan 1 pasien dengan nekrosis usus yang disebabkan oleh hernia internal. Seluruh komplikasi yang berhubungan neobladder sebanyak 4/33%. Komplikasi lain yang tidak berhubungan dengan neobladder yaitu 1 pasien dengan penyakit ginjal kronis dan sepsis, dan 1 pasien dengan gagal ginjal akut dan asidosis metabolik hiperklor. Semua komplikasi yang di atas menyebabkan mortalitas (2/16%), kecuali kebocoran saluran kemih dapat dikoreksi dengan baik. **Simpulan:** Tingkat komplikasi dan kematian radikal sistektomi sehubungan neobladder sebesar 33% dan 16% dibandingkan dengan literatur menunjukkan 28-64% dan 5.1-8.1% secara berurutan. Pemilihan pasien yang tepat ($< T3$, tidak ada komorbid) dan pengalaman lebih lanjut dapat mengurangi tingkat kematian.

Kata kunci: Kanker kandung kemih, neobladder orthotopik, radikal sistektomi.

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INTRODUCTION

Radical cystectomy remains the gold standard for treatment of patients with muscle invasive bladder cancer or recurrent high grade non muscle invasive bladder cancer. Radical cystectomy procedure associated with a high complication rate. The risk of complications is related to both the cystectomy itself, and to the urinary diversion reconstruction which is obligatory after cystectomy.¹⁻³ Ninety-day mortality rates from population studies ranges from 5.1-8.1% which are high for surgery which curative intent.^{4,5} Morbidity is also significant, with 90-day complication rate between 28-64%, even in high volume centers.^{1,6,7} The high rates of morbidity and mortality reflect the fact that the majority of patient undergoing this procedure are elderly patients with multiple comorbidities.

Orthopic bladder substitutions have become standard for urinary reconstruction after radical cystectomy in patients who do not have neoplastic lesions of the urethra. Several types of orthopic bladder substitutions have been developed, of which Studer's ileal neobladder is one of the most common procedures.⁸ The overall number of complications is often considered higher with an ileal neobladder than with an ileal conduit.⁹

Typical early post operative complications include persistent urine leak, pyelonephritis, and bowel complications such as ileus and small bowel obstruction. Late complications include uretero-enteric and nonvesical-urethral anastomotic stricture, urinary fistula, urolithiasis and voiding dysfunction and incontinence.¹⁰

OBJECTIVE

The purpose of this study was to evaluate complications of ileal neobladder reconstruction in high grade bladder cancer patients.

MATERIAL & METHODS

From August 2006 until now, 12 patients had a radical cystectomy and bladder reconstruction with ileal neobladder for invasive carcinoma of the bladder at AMC Kariadi Hospital Semarang. We recorded all data retrospectively from the beginning

patient came to our ward for perioperative preparation, then we evaluated the outcome and complication of these operation procedure from perioperative care, postoperative care, and outpatients clinic.

RESULT

The average ages distribution range from 39-70 year. There were 2 patients with comorbid of renal failure, 11 patients with history of TURBT as tool diagnostic and 1 patient underwent adjuvant external radiation after TURBT. There were 11 patients in high grade bladder cancer ($\geq T3$) and 1 patient with T2. Of the 8 patients underwent orthotopic neobladder procedure and 3 patients underwent cutaneous w shape procedure. From the histopathology results, 10 patients with high grade transitional cell carcinoma, and 2 patients with invasive urothelial cell carcinoma. Type of complication divided to related and non related, shown in table 2. Neobladder related note as urinary leakage, ileoileal leakage, internal hernia, fistula as

Table 1. Patients characteristics (n=12).

Characteristics	n (%)
Sex	
Male (%)	11 (92)
Female (%)	1 (8)
Mean Age: year (range)	53.66 (39 -70)
Clinical Stage:	
Number of Patients (%)	
T0	0 (0)
T1	0 (0)
Tis	0 (0)
T2	1 (8)
T3	8 (67)
T4	3 (25)
Urinary Diversion Technique:	
Orthotopic bladder	1 (8)
Studder	7 (58)
Cutaneous W -shape	2 (17)
Conduit Continent	1 (8)
Ureterocutaneostomy	1 (8)
Histopathology	
High grade transitional cell	10 (83)
Invasive urothelial cell carcinoma	2 (17)

Table 2. Complications.

Complications	n (%)
Neobladder related:	
Urinary leakage	1 (8)
Ileo-ileal anastomose leakage	1 (8)
Internal hernia	1 (8)
Fistel	1 (8)
Neobladder non related:	
Chronic renal disease + sepsis	1 (8)
Hyperchlor Acidosis	1 (8)

Table 3. Overview complications by the Clavien-Dindo classification in 12 patients (<3 months).

Clavien -Dindo Score	n (%)
Major:	
V	2 (16)
IV	
a	0
b	0
III	
a	0
b	1 (8)
Minor:	
II	0
I	0

Table 4. Overview complications by the Clavien-Dindo classification in 10 patients (>3 months).

Clavien-Dindo Score	N=10 (%)
Major:	
V	0
IV	
a	2 (20)
b	0
III	
a	0
b	0
Minor:	
II	1 (10)
I	0

much 33%. Complication neobladder-related evaluated two periode before 3 month and after. Early complication (<3 month post operative) mark as Clavien Dindo grade V, 1 patient with peritonitis

caused by ileo-ileal anastomose leakage, 1 patient with bowel necrosis caused by internal hernia and 1 patient mark as Clavien Dindo III b with urinary leakage from ureteroileal anastomose, who need re-operation. All of complications described above end with mortality, except the urinary leakage.

Longterm evaluation, after 3 month complication arise from neobladder non-related. One patient with chronic renal disease and sepsis, and 1 patient with acute renal failure and hyperchlor metabolic acidosis.

DISCUSSION

When using a major surgical procedure like radical cystectomy and subsequent urinary diversion, some complications are to be expected, regardless of long procedures, blood loss and consequences of type, complications of urinary diversion.^{1,3,11} Morbidity with 90-day complication rate between 28-64%, even in high volume centers.^{1,6,7} Although frequent, neobladder-related early complications resulted in few permanent sequelae for the patients. Leakage from either the ileo-ureteric anastomosis or the ileo-urethral anastomosis was incidentally diagnosed on routine follow-up, all patients being symptomless. Early evaluation, before 3 months after neobladder done, shown in table 3 as mark as Clavien Dindo V is 16%, came from 1 patient peritonitis caused by ileo-ileal anastomose leakage. This complication maybe due to unfit patient state, presence of hydronephrosis in MSCT and mild chronic renal failure in these patients. One patient, 34 years old, recidif bladder cancer after TURBT + EBRT, suffer obstructive ileus, peritonitis due internal hernia. Remnant ileum graft trap between uretero - neobladder anastomose. He underwent re-exploration, resection non viable ileum and but he died after 14 days re-operation. Early complication, before 3 months after neobladder procedure 90-days mortality rates from population studies ranges from 5.1-8.1% which are high for surgery which curative intent.^{4,5}

Longterm complication (Table 4) arise from neobladder-unrelated, 1 patient with chronic renal disease and sepsis, and 1 patient with acute renal failure and hyperchlor metabolic acidosis, which the metabolic consequences are dependent on type, position and length of bowel used that commonly seen in orthopic bladder than ileal conduit due to longer contact time of urine with bowel mucosa. The presence of hyperosmolar urine in orthopic bladder

result in the secretion of Sodium from the orthotopic bladder into the urine in exchange for H⁺ ions, further promoting metabolic acidosis. Thus, constructing an ileal neobladder is a reliable method of urinary diversion with few major complications. Functionally, it bears a close resemblance to the native bladder and provides a cosmetically acceptable result for the patient. If there were no contraindications patients should be given the choice of an orthotopic neobladder.^{12,13}

CONCLUSION

Radical cystectomy with bladder reconstruction is a challenging procedure that offered to patients in the absence of absolute contraindications whilst taking into oncological account and patient factors. It is important to manage patient's expectations and ensure that they are committed and fully engaged. It carries significant risk of complications. The technique is gaining popularity and should be the mainstay of the postoperative period. We have a 33% complication rate with neobladder related, mortality rate 16% due to comorbid patients. Patient selection (<T3, no comorbid) and experience according to high volume operation can reduce the complication rate. Review literature complication rate between 28-64%, mortality rates from ranges from 5.1-8.1%, even in high volume centers.^{1,4-7}

REFERENCES

1. Stein JP, Lieskovsky G, Cote R. Radical cystectomy in the treatment of invasive bladder cancer: long-term results in 1,054 patients. *J Clin Oncol.* 2001; 19: 666-75.
2. Carrion R, Seigne J. Surgical management of bladder carcinoma. *Cancer Control.* 2002; 9: 284-92.
3. Knap MM, Lundbeck F, Overgaard J. Early and late treatment-related morbidity following radical cystectomy. *Scand J Urol Nephrol.* 2003; 38: 153-60.
4. AS Zakaria, F Santos, A Dragomir, S Tanguay, W Kassouf, AG Aprikian. Postoperative mortality and complications after radical cystectomy for bladder cancer in Quebec: a population-based analysis during the years 2000-2009. *Canadian Urological Association Journal.* 2014; 8(7-8): 259-67.
5. LS Hounsome, J Verne, JS McGrath, DA Gillatt. Trends in operative caseload and mortality rates after radical cystectomy for bladder cancer in England for 1998-2010. *European Urology.* 2015; 67(6): 1056-62.
6. A Shabsigh, R Korets, KC Vora. Defining early morbidity of radical cystectomy for patients with bladder cancer using a standardized reporting methodology. *European Urology.* 2009; 55(1): 164-76.
7. RE Hautmann, RC dePetroni, BG Volkmer. Lessons learned from 1,000 neobladders: the 90-day complication rate. *The Journal of Urology.* 2010; 184(3): 990-4.
8. Stein JP, Skinner DG. Orthotopic urinary diversion. In: Walsh PC, Retik AB, Vaughan ED, Wein AJ, editors. *Campbell's Urology*, 8th Ed. Philadelphia: Saunders. 2002; 4: 3835-67.
9. Hautmann RE, Paiss T. Does the option of the ileal neobladder stimulate patient and physician toward earlier cystectomy? *J Urol.* 1998; 159: 1845-50.
10. Hautmann RE, Volkmer BG, Schumacher MC, Gschwend JE, Studer UE. Long-term results of standard procedures in urology: the ileal neobladder. *World J Urol.* 2006; 24: 305-14.
11. Hautmann RE, de Petroni R, Gottfried HW, Kleinschmidt K, Mattes R, Paiss T. The ileal neobladder: complications and functional results in 363 patients after 11 years of follow-up. *J Urol.* 1999; 161: 422-8.
12. RD Mills, UE Studer. Metabolic consequences of continent urinary diversion. *Journal of Urology.* 1999; 161(4): 1057-66.
13. F Van der Aa, S Joniau, M Van Den Branden, H Van Poppel. Metabolic changes after urinary diversion. *Advances in Urology*; 2011: 5. Article ID 764325.