

Analysis of Perioperative Complications Following Radical Cystectomy – Our Experience in a South Indian Tertiary Urology Centre

Raghuveer Pedamallu^{1,2}

ABSTRACT

Introduction: Bladder cancer is one of the common urological malignancy. The aim of this study was to analyze perioperative complications and mortality in our institute following radical cystectomy and urinary diversion.

Material and methods: Thirty four patients presented with muscle invasive bladder cancer for radical cystectomy to urology department between August 2009 and December 2011 was included in the study.

Results: Patients mean age was 56.9 Years. There was higher percentage of Male patients compared to Female patients with ratio of 4.6:1 and most of the patients had ASA score \leq 2.0. Mean operating time and length of hospital stay was 4.2 hours and 10.2 days respectively. Perioperative complications was observed in 32.35% of patient cohort and perioperative mortality rate of 2.94%. The most frequent complications were ileus (6 patients) followed by wound infection / wound dehiscence (4 patients). No preoperative factors predicted complications were found except for age.

Conclusion: In our study, age was the only preoperative factors predicted complication and mortality rate. With proper selection of patients, and preoperative evaluation, surgical technique and better postoperative care, Radical cystectomy with urinary diversion can be safely done in selected patients with acceptable morbidity and mortality.

Keywords: Preoperative Factors, Radical Cystectomy with Urinary Diversion, Complication and Mortality Rate

INTRODUCTION

Bladder cancer is one of the common urological malignancy (30 to 40%) in India (1). In India, it ranks next to Prostate cancer (40 to 71%) (1). Bladder cancer is more common in males compared to females [8.9:1 in India, 3-4:1 in western literature][1]. Superficial bladder cancer constitutes 70 %of all bladder cancer and muscle invasive bladder cancer constitutes 30%. One of the most common subtype of bladder cancers is transitional cell carcinoma.¹⁻⁵

Radical cystectomy is major modality of treatment for muscle invasive bladder cancer. Although bladder cancer surgery is significantly associated with morbidity and mortality. By invention of new techniques and better post-operative care morbidity and mortality became less. The aim of this study was to analyze perioperative complications and mortality in our institute following radical cystectomy and urinary diversion.

MATERIAL AND METHODS

This prospective study contained 34 patients undergoing radical cystectomy for muscle invasive bladder cancer from September 2009 to December 2011 in Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, Andhra Pradesh, India. Informed consent was taken from all the patients and Ethical committee approval for this study was obtained.

Inclusion criteria was patients with muscle invasive bladder cancer were considered for this study. Exclusion criteria used was patients who had undergone pre-operative chemotherapy and radiotherapy and metastatic bladder cancer. Factors such as Age, Gender, ASA Score, BMI, Smoking, Comorbidities factors (like Diabetes, Hyper Tension, Cardiac Disease, Chronic Obstructive Pulmonary Disease (COPD), Pre-operative Creatinine, Pathologic stage, Histopathological subtype, Type of diversion, Length of hospital stay, Operating time included. All patients were subjected to History, Physical examination, Laboratory workup like Complete blood picture, Complete urine examination, Renal Function Test (RFT), Liver Function Test (LFT) and Imaging techniques like ECG, Chest X-ray – PA view, Ultrasound KUB, and Contrast enhanced CT abdomen and pelvis are taken.

All patients had undergone pre-operative cardiac and anesthetic checkup. All male patients underwent open radical cystoprostatectomy with pelvic node dissection. In female patient open radical cystectomy, bilateral salping oophorectomy, hysterectomy, anterior wall of vagina was removed along with bilateral pelvic lymph node dissection. Ileal conduit was done as diversion procedure for 27 patients and Orthotopic Neobladder was done in 2 patients. Cutaneous ureterostomy in 4 patients and Ureterosigmoidostomy in

¹Ex-Assistant Professor, Department of Urology, Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, Andhra Pradesh,

²Assistant Professor, Department of Urology, Nizam's institute of medical sciences (NIMS), Hyderabad, Telangana, India

Corresponding author: Raghuveer Pedamallu, Department of Urology, Nizam's institute of medical sciences (NIMS), Hyderabad, Telangana, India

How to cite this article: Raghuveer Pedamallu. Analysis of perioperative complications following radical cystectomy – our experience in a South Indian tertiary urology centre. International Journal of Contemporary Medical Research 2019;6(11):K1-K4.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.11.22>

1 patient. All patients were followed up to 1 month with history, physical examination, laboratory workup like complete blood picture, complete urine examination, urine cytology, renal function test (RFT), and imaging techniques like, ultrasound KUB.

STATISTICAL ANALYSIS

Statistical analysis on the results was performed in R Studio (<https://rstudio.com>), P-value ≤ 0.05 was considered as statistically significant. Statistical test used in the study is Fisher's exact two tailed test.

RESULTS

Table 1 to 13 provides the summary of clinical and pathological data for 34 patients. Table 1 illustrates the age

Age	No. of Patients
≥ 30 Age < 40 years	1
≥ 40 Age < 50 years	5
≥ 50 Age < 60 years	13
≥ 60 Age < 70 years	15

Table-1: Age distribution in the Study

Gender	No. of Patients
Male	28
Female	6

Table-2: Gender distribution in the Study

ASA Score	No. of Patients
1	3
2	20
3	10
4	1

Table-3: ASA score distribution in the Study

Comorbidities	No. of Patients
Diabetes	11
Hypertension	8
COPD	6
Cardiac disease	6

Table-4: Comorbidities distribution in the Study

Smoking Status	No. of Patients
Smokers	20
Non-smokers	14

Table-5: Smoking status in the Study

Pre-operative Creatinine	No. of Patients
< 1.5	24
≥ 1.5	10

Table-6: Pre-operative Creatinine distribution in the Study

Hospital Stay	No. of Patients
≤ 10 days	24
> 10 days	10

Table-7: Length of hospital stay in the Study

distribution among the patients with mean age of 56.9 years old. There is higher percentage of Male patients compare to Female patients with ratio of 4.6:1 (illustrated in Table 2). The most common tumor site is in right lateral wall (16 patients) as shown in Table 13. Patients in this study comprises of higher smoking history (as shown in Table 5). Table 3 illustrates that most of the patients have ASA score ≤ 2.0 . There is higher percentage of patients with serum creatinine levels < 1.5 (illustrated in Table 6). Mean serum creatinine is 1.2. Diabetes is the common comorbidities in the cohort as illustrated in Table 4. Most of patients in the cohort exhibits BMI ≤ 30 (as shown Table 10). Ileal conduit was performed as diversion in 27 cases, Neobladder was performed in 2 cases, Cutaneous ureterostomy was performed in 4 cases, and Ureterosigmoidostomy was performed in 1 case (as shown in Table 11). Most of patients presented with pathological stage

Histopathological subtype	No. of Patients
TCC	30
Adenocarcinoma	2
Squamous carcinoma	2

Table-8: Histopathological subtypes and associated number of patients in the Study

Complications	No. of Patients
Prolonged Ileus	6
Wound infection / Dehiscence	4
MI	1

Table-9: Complications and associated number of patients in the Study

BMI	No. of Patients
20 to 30 Kg/m ²	28
>30	6

Table-10: Patients BMI distribution in the Study

Type of diversion	No. of Patients
Ileal conduit	27
Cutaneous ureterostomy	4
Neobladder	2
Ureterosigmoidostomy	1

Table-11: Types of diversions and associated number of patients in the Study

Operating time	No. of Patients
< 5hrs	24
≥ 5 hrs	10

Table-12: Length of operating time (in hours) in the Study

Site of Tumor	No. of Patients
Right Lateral Wall	16
Left Lateral Wall	8
Dome	4
Posterior Wall	6

Table-13: Tumor site and associated number of patients in the Study

T2. Mean operating time and length of hospital stay is 4.2 hours and 10.2 days respectively (more details are presented in Table 12 and 7).

Perioperative complications is observed in 32.35% of patient cohort where as one patient died immediate post-operative period due to Myocardial infarction. Frequent complications in this study were ileus (6 patients) followed by wound infection / wound dehiscence (4 patients). Ileus is most common complication after radical cystectomy in our study (6 patients) followed by wound infection/dehiscence (4 patients). No preoperative factors predicted complication except for age. In our study elderly patients (≥ 60 years) showed statistically significant (P -value = 0.0002) increase in mortality and complication rate. Gender, ASA Score, BMI, smoking, Pre-operative Creatinine, Pathologic stage, Type of diversion, Histopathological subtype, Operating time have shown no statistically significant association with perioperative complication and mortality.

DISCUSSION

Radical cystectomy is a major modality of treatment for Muscle invasive bladder cancer with acceptable morbidity and mortality in patients selected. Perioperative complication is defined as any adverse events that occur within 30 days of surgery. Perioperative mortality is mortality within 30 days of surgery. Ileus (6) and wound infection/wound dehiscence (4) are most common complications in our study. Wound dehiscence is seen in 4 patients which required secondary suturing. 1 patient developed MI and died in 1st POD. In our study, perioperative complication rate 32.35% and mortality rate of 2.94%

Montie and Wood (1989) reported perioperative mortality of 0.4%.⁵ Frazier et al. (1992) reported 30 days perioperative complications of 31.9% and perioperative mortality of 2.5%.³ Figueroa et al. (1998) reported 25% early complication rate in less than 70 Years age and 32% in those 70years and above. They also showed mortality rate of 2.8% for 70 years and above and 2% for less than 70 years.⁴ Rosario et al. (2000)⁸ reported early complication rate of 19% and mortality rate of 2%. Shabsigh et al. (2009),² reported 30 days perioperative complication rate is 58% and perioperative mortality of 2%. Raza et al. (2012)⁶ reported 30 days perioperative complication rate of 56.2% and perioperative mortality of 4.5%. Novotny et al. (2013) showed that perioperative complications were frequently seen in more than 70 years age is 31.0% compared to lesser age groups (21.5%) and Mortality rate was: 0.6% (elderly) compared to 0.5% (younger).⁹ Leelapatree et al. (2014) from Thailand reported 90 days perioperative complication rate of 35.5% and perioperative mortality rate of 8.4%.⁷

There are several other papers reported the complication rate and mortality rates. Boström et al. (2009) showed complication rate of 34% and mortality rate of 2.7%.¹⁰ Clark et al. (2005) reported 24-30% perioperative complication rate and 1-4% mortality rate.¹¹ Chang et al. (2002) reported major complication rate of 4.9% and mortality rate of 0.3%.¹² Gupta et al. (2008) reported 25.7% early complication rate

and mortality rate of 6.9%.¹³

Our results are comparable to previous studies. In this study, there are no preoperative factors predicted complications except for age. In our study elderly patients ≥ 60 years had increased mortality and complication rate with P -value = 0.0002 which is statistically significant. Gender, ASA Score, BMI, smoking, Pre-operative Creatinine, Pathologic stage, Type of diversion, Histopathological subtype, and Operating time has no statistically significant association with perioperative complication and mortality rate.

CONCLUSION

In our study, no preoperative factors predicted complication and mortality rate except age. With proper selection of patients, and preoperative evaluation, surgical technique and better postoperative care, Radical cystectomy with urinary diversion can be safely done in selected patients with acceptable morbidity and mortality. Our low rate of complications and mortality is because of smaller cohort size and shorter follow-up period.

ACKNOWLEDGEMENTS

I would like to thank Prof. S. Subramanian, Ex-Professor and Head of the Department, Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, Andhra Pradesh, India for his kind helpful discussions. Also, would like to thank all the patients and staff at Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, Andhra Pradesh, India.

REFERENCES

1. Yuvaraja TB, Waigankar S, Bakshi G, Prakash, G. Genitourinary cancers: Summary of Indian data. South Asian J Cancer. 2016; 5: 122–124.
2. Shabsigh A, Korets R, Vora KC, Brooks CM, Cronin AM, Savage C, et al. Defining early morbidity of radical cystectomy for patients with bladder cancer using a standardized reporting methodology. Eur Urol. 2009; 55:164-74.
3. Frazier HA, Robertson JE, Paulson DF. Complications of radical cystectomy and urinary diversion: a retrospective review of 675 cases in 2 decades. J Urol. 1992; 148:1401-5.
4. Figueroa AJ, Stein JP, Dickinson M, et al. Radical cystectomy for elderly patients with bladder carcinoma: an updated experience with 404 patients. Cancer. 1998; 83:141.
5. Montie JE, Wood JP. The risk of radical cystectomy. Br J Urol. 1989; 63:483.
6. Raza SJ, Ather MH, Khan FA, Alam Z. Grading complication following radical cystectomy and ileal conduit for bladder cancer using Clavien grading system. J Coll Physicians Surg Pak. 2012; 22:448-51
7. Leelapatree P, Sirisreetreerux P, Kochakarn W, Leenanuphan J, Kongjaroensombat W, Kijvikai K, et al. Perioperative Complications and Mortality following Radical Cystectomy and Urinary Diversion in Bladder Cancer in Ramathibodi Hospital. Rama Med J. 2014; 37:126-131.
8. Rosario DJ, Becker M, Anderson JB. The changing pattern of mortality and morbidity from radical

- cystectomy. *BJU Int.* 2000; 85: 427.
9. Novotny V, Hakenberg OW, Froehner M, Zastrow S, Leike S, Koch R, et al. Systematic Assessment of Complications and Outcome of Radical Cystectomy Undertaken with Curative Intent in Patients with Comorbidity and over 75 Years of Age. *Urol Int.* 2013;90:195-201.
 10. Boström PJ, Kössi J, Laato M, Nurmi M. Risk factors for mortality and morbidity related to radical cystectomy. *BJU Int.* 2009; 103:191-6.
 11. Clark PE, Stein JP, Groshen SG, Cai J, Miranda G, Lieskovsky G, et al. Radical cystectomy in the elderly: comparison of clinical outcomes between younger and older patients. *Cancer.* 2005;104:36.
 12. Chang SS, Cookson MS, Baumgartner RG, Wells N, Smith JA Jr. Analysis of early complications after radical cystectomy: results of a collaborative care pathway. *J Urol.* 2002;167:2012-6.
 13. Gupta NP, Kolla SB, Seth A, Dogra PN, Hemal AK, Kumar R, et al. Radical cystectomy for bladder cancer: A single center experience. *Indian J Urol.* 2008; 24:54-59.
 14. The effect of age and gender on bladder cancer: a critical review of the literature
 15. Shahrokh F. Shariat, John P. Sfakianos, Michael J. Droller, Pierre I. Karakiewicz, Siegfried Meryn, and Bernard H. Bochner *BJU Int.* 2010; 105: 300–308.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 01-10-2019; **Accepted:** 20-10-2019; **Published:** 23-11-2019