



The prevalence of urinary incontinence among patients with prostatic carcinoma who underwent radical retropubic prostatectomies-a local retrospective study

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Abstract

Background and objective: The prostate cancer is the fourth cancer responsible for mortality in Kurdistan region. Urinary incontinence is the frustrating complication of prostatectomy. To assess the predisposing factors of urinary incontinence in patients had prostatic carcinoma underwent radical retropubic prostatectomy.

Methods: The design of current study was retrospective which carried out in Rizgari hospital in 3 years period from first of October 2019 to end of September 2022 on 41 patients with localized prostate cancer who doesn't have urinary incontinence before surgery and underwent radical retropubic prostatectomy. The inclusion criteria encompassed patients having localized prostate cancer without preoperative urinary incontinence, who subsequently underwent radical retropubic prostatectomy. Conversely, the exclusion criteria involved patients with localized prostate cancer exhibiting preoperative urinary incontinence, advanced prostate cancer, metastatic prostate cancer.

Results: Prevalence of urinary incontinence at 3rd month postoperatively for patients with prostatic carcinoma who underwent radical retropubic prostatectomies was (22%) in which (78%) was free from incontinence. Prevalence of urinary incontinence at 12th month postoperatively for patients with prostatic carcinoma underwent radical retropubic prostatectomies was (4.9%) in which (95.1 %) was free from incontinence. Various risk factors play a significant role in the development of incontinence post radical retropubic prostatectomy. These factors include obesity, smoking history, diabetes mellitus, prostate volume, and advanced pathological T staging. Their impact on the study was statistically significant.

Conclusions: Urinary incontinence magnitude at 3rd and 12th months following radical retropubic prostatectomy is within acceptable range.

Keywords: Prostate cancer, Radical Retropubic Prostatectomy, Risk factors, Urinary Incontinence

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Introduction

Prostatic cancer is a common public health problem and the second common cause responsible for death in males. The prognosis of prostatic cancer has improved due to earlier detection and advanced treatment.¹ Incidence of prostatic cancers in Iraq was increased gradually in last decades.² The incidence of prostatic cancer in Erbil city was (8.2 per 100.000 population) representing the fourth common cancer affecting male patient in last seven years.³ Best management of local prostate carcinoma nowadays is by radical retropubic prostatectomy (RRP).⁴ First description of retropubic approach in RP was reported at 1947.⁵ Unfortunately, this approach was accompanied by multiple intra and postoperative complications.⁵ However, in last three decades, advanced medical technology has been elevated the clinical and functional outcomes postoperatively.⁶ Generally, the radical retropubic prostatectomy (RRP) aimed to resect cancer with conserving of margins, minimization of hemorrhage and preserving the urinary flow with potency.⁷ Urinary incontinence has high negative impact on patient's QoL as well as burden for health care system. The urinary incontinence is defined as a complaining from any urinary incontinence or involuntary urine leakage.⁸ The urinary incontinence in general is caused by bladder dysfunction, sphincteric dysfunction or both of them. Post-prostatectomy, the stress urinary incontinence is considered as the main type of urinary incontinence explored by different literatures.^{8, 9} Measuring the magnitude and predisposing factors for urinary incontinence are not well understood till now, however, dysfunction in urinary storage complaints like urinary incontinence and de novo overactive bladder is perceived after radical retropubic prostatectomy.¹⁰ Some authors reported prevalence rate of urinary incontinence 80-97% after radical retropubic prostatectomy.¹¹ Others found urinary

incontinence prevalence of 100% with occasional urinary incontinence, or pad application in 24 hours.⁵ Generally, 26% of men had urinary incontinence at 12 months following radical retropubic prostatectomy.¹² However, this urinary incontinence is improved gradually with time. One study showed that about 25% of patients with urinary incontinence following radical retropubic prostatectomy reported improvement in period of 2-4 years.¹³ This study aims to assess the prevalence and risk factors of urinary incontinence among patients with localized prostatic carcinoma who have undergone radical retropubic prostatectomy.

Patients and methods

Retrospective cohort study was conducted in Rizgari Teaching Hospital in Erbil for 3 years from first of October 2019 to end of September 2022. We enrolled 41 patients with localized prostatic carcinoma without urinary incontinence before surgery and undergoing radical retropubic prostatectomies were inclusive criteria. Exclusion criteria were patients with localized prostate cancer had urinary incontinence before surgery, advanced prostate cancer, metastatic prostate cancer and missing or incomplete data of patients. The research project was approved by Kurdistan Higher Council of Medical Specialties, hospital authorities and oral informed consent of patients. Patients' information was obtained through the researcher retrospectively by reading the saved data of patients and filling the data in electronic well-designed questionnaire. The urinary incontinence was diagnosed according to national and international guidelines.¹⁸ The biopsy Gleason score was categorized by Pathologist based on Gleason grading system. The follow up of patients postoperatively was done at 3 months and at 12th Months post-operatively based on Questionnaire (ICIQ-UI SF) through clinical





visits and phone calls.¹⁴ The collected data were analyzed by statistical package of social sciences program version twenty-six. Statistical tests were applied for categorical and continuous data. A p-value of less than 0.05 was considered statistically significant.

Results

In this study, 41 patients were included. Prevalence of urinary incontinence at 3rd month postoperatively for patients with was (22%), Figure (1).

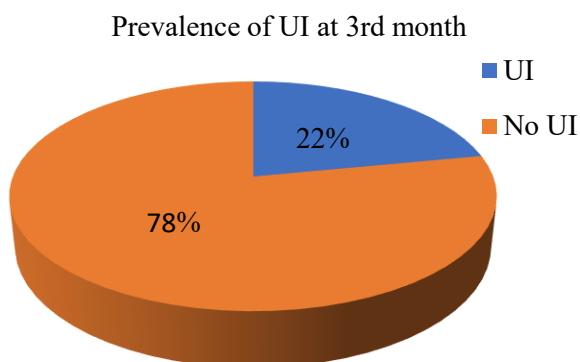


Figure (1): Prevalence of urinary incontinence at 3rd month.

Prevalence of urinary incontinence at 12th month postoperatively for patients with prostatic carcinoma underwent Radical retropubic prostatectomies was (4.9%), Figure (2).

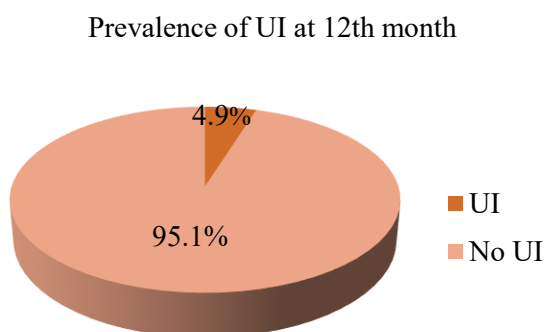


Figure (2): Prevalence of urinary incontinence at 12th month.

There was a significant decline in urinary incontinence of patients with prostatic carcinoma underwent Radical retropubic prostatectomies after 12 months postoperatively, Table (1).

Table (1): Distribution of urinary incontinence at 3rd and 12 months.

Variable	Study period				P
	3 rd month		12 th month		
	No.	%	No.	%	
Urinary incontinence					0.05
Yes	9	22.0	2	4.9	
No	32	78.0	39	95.1	

There was no significant difference between patients with UI at 3rd month and patients without UI regarding age (p=0.4). The obesity was significantly associated with urinary incontinence at 3rd month. The smoking history was significantly more prevalent in patients with urinary incontinence at 3rd month postoperatively. There was a significant association between diabetes mellitus and urinary incontinence at 3rd month, Table (2).

Table (2): Distribution of general characteristics according to UI at 3rd month.

Variable	Urinary incontinence at 3 rd month				P
	Yes		No		
	No.	%	No.	%	
Age					0.4
<60 years	0	-	5	15.	
60-69 years	3	33.3	12	37.	
70-79 years	5	55.6	14	43.	
≥80 years	1	11.1	1	3.1	
Body mass index					<0.001
Normal	0	-	17	53.	
Overweight	0	-	14	43.	
Obese	9	100.	1	3.1	
Smoking history					





Yes	7	77.8	5	15.	<0.001
No	2	22.2	27	84.	
Clinical co-morbidity					0.007
No	4	44.4	27	84.	
Diabetes	4	44.4	1	3.1	
Hypertensio	1	11.1	2	6.3	
Ischemic heart disease	0	-	2	6.3	

There were no significant differences between patients with UI at 3rd month and patients without UI in regard to S.PSA and biopsy Gleason score. Mean prostatic volume was significantly higher among patients with urinary incontinence at 3rd month. There was a highly significant association between advanced T staging of prostate cancer and urinary incontinence at 3rd month, Table (3).

Table (3): Distribution of preoperative characteristics according to UI at 3rd month.

Variable	Urinary incontinence at 3 rd month				P
	Yes		No		
	No.	%	No.	%	
S.PSA					0.2
Normal	0	-	4	12.5	
High	9	100.0	28	87.5	
Prostatic volume					0.003
Mean±SD (ml)	30.1±4.7		25.8±3.2		
Biopsy Gleason score					0.8
6	1	11.1	4	12.5	
7	6	66.7	21	65.6	
8	0	-	2	6.3	
9	2	22.2	5	15.6	
Pathological T staging					<0.001
Stage 1c	0	-	4	12.5	
Stage 2a	0	-	3	9.4	
Stage 2b	0	-	6	18.8	
Stage 2c	1	11.1	18	56.3	

Stage 3a	1	11.1	0	-	
Stage 3b	2	22.2	0	-	
Stage 3c	3	33.3	1	3.1	
Stage 4	2	22.2	0	-	

There was no significant difference between patients with UI at 12th month and patients without UI in regard to age. The obesity was significantly associated with urinary incontinence at 12th month. The smoking history was significantly more prevalent in patients with urinary incontinence at 12th month. There was a significant association between diabetes mellitus and urinary incontinence at 12th month, Table (4).

Table (4): Distribution of general characteristics according to UI at 12th month.

Variable	Urinary incontinence at 12 th month				P
	Yes		No		
	No.	%	No.	%	
Age					0.4
<60 years	0	-	5	12.8	
60-69 years	0	-	15	38.5	
70-79 years	2	100.0	17	43.6	
≥80 years	0	-	2	5.1	
Body mass index					0.03
Normal	0	-	17	43.6	
Overweight	0	-	14	35.9	
Obese	2	100.0	8	20.5	
Smoking history					0.02
Yes	2	100.0	10	25.6	
No	0	-	29	74.4	
Clinical co-morbidity					0.002
No	0	-	31	79.5	
Diabetes mellitus	2	100.0	3	7.7	
Hypertension	0	-	3	7.7	
Ischemic heart disease	0	-	2	5.1	





There were no significant differences between patients with UI at 12th month and patients without UI regarding S.PSA and pathological T staging. Mean prostatic volume was significantly higher among patients with urinary incontinence at 12th month. There was a significant association between advanced biopsy Gleason score of prostate cancer and urinary incontinence at 12th month, Table (5).

Table (5): Distribution of preoperative characteristics according to UI at 12th month.

Variable	Urinary incontinence at 12 th month				P
	Yes		No		
	No.	%	No.	%	
S.PSA					0.6
Normal	0	-	4	10.3	
High	2	100.0	35	89.7	
Prostatic volume					0.003
Mean±SD (ml)	34.5±0.7		26.3±3.6		
Biopsy Gleason score					0.01
6	0	-	5	12.8	
7	0	-	27	69.2	
8	0	-	2	5.1	
9	2	100.0	5	12.8	
Pathological grading					0.2
Stage 1c	0	-	4	10.3	
Stage 2a	0	-	3	7.7	
Stage 2b	0	-	6	15.4	
Stage 2c	1	50.0	18	46.2	
Stage 3a	0	-	1	2.6	
Stage 3b	0	-	2	5.1	
Stage 3c	0	-	4	10.3	
Stage 4	1	50.0	1	2.6	

Discussion

Prevalence of urinary incontinence at 3rd month postoperatively in current study for patients with prostatic carcinoma underwent

RRP was (22%). This prevalence is better than findings of Sacco et al literature in Italy which reported UI measure of (83%) at 3rd month following RRP.¹⁵ Another literature conducted by Yaxley et al found that 44% of patients developed UI at 3rd month post-RRP.¹⁶ Our study showed that prevalence of urinary incontinence at 12th month postoperatively for patients with prostatic carcinoma underwent RRP was (4.9%). This prevalence is better than findings of Hamdy et al who found that 26% of men had UI at 12th month after subjected to RRP.¹² Coughlin et al study reported 5% prevalence of UI for men underwent RRP at 24th month postoperatively.¹⁷ These better findings of our study could be related to surgeon experience and factors related to patients' characteristics and compliance. The current study found a significant decline in urinary incontinence of patients with prostatic carcinoma underwent RRP after 12 months postoperatively. Consistently, Sosnowski et al study which revealed a significant reduction of UI prevalence from 3rd month to 12th month postoperatively.¹⁸ In current study, obesity, smoking history and diabetes mellitus were significantly associated with urinary incontinence at 3rd month post-RRP. These findings are consistent with results of different literatures.^{19, 20} Our study showed that increased prostatic volume was significantly higher among patients with urinary incontinence at 3rd month postoperatively. This finding is parallel to results of Lepor and Kaci study in which found that UI at 3rd month post-RRP is related to prostatic volume.²¹ Our study found a highly significant association between advanced T staging of prostate cancer and urinary incontinence at 3rd month postoperatively. Pereira et al study reported that advanced pathological T staging of prostate cancer is related to UI at 3rd month post-RRP.²² Present study found that obesity, smoking history and diabetes mellitus were





significantly associated with urinary incontinence at 12th month post-RRP. Our study results are compatible to findings of Wilson study.²³ Our study showed that increased prostatic volume and advanced pathological T staging were related to urinary incontinence at 12th month postoperatively. In parallel, Egawa et al study which stated that increased prostate volume and advanced pathological T staging are related to UI at 12th month post-RRP.²⁴

Conclusion

In conclusion, the prevalence of urinary incontinence at 3rd and 12th months following radical retropubic prostatectomy is within acceptable range. Risk factors for urinary incontinence following radical retropubic prostatectomy are obesity, history of smoking, diabetes mellitus, prostate volume and advanced pathological T staging.

Conflicts of interest

None.

References

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2019. *CA Cancer J Clin* 2019; 69:7–34.
2. Mohammed Al-Hashimi, M. Spatial analysis of prostate cancer incidence in Iraq during 2000-2015. *MJPHM*. 2021; 21(1): 72–80. Available from: <https://doi.org/10.37268/mjphm/vol.21/no.1/art.584/>
3. M-Amen K, Abdullah OS, Amin AMS, Mohamed ZA, Hasan B, Shekha M, et al. Cancer Incidence in the Kurdistan Region of Iraq: Results of a Seven-Year Cancer Registration in Erbil and Duhok Governorates. *Asian Pac J Cancer Prev* 2022; 23(2):601-15.
4. Cornu JN, Phé V, Fournier G, Delmas V, Sèbe P. Fascia surrounding the prostate: clinical and anatomical basis of the nerve-sparing radical prostatectomy. *Surg Radiol Anat* 2010; 32:663-7.

5. Lepor H. A review of surgical techniques for radical prostatectomy. *Rev Urol* 2005; 7 Suppl 2: S11-7.
6. Stolzenburg JU, Schwalenberg T, Horn LC, Neuhaus J, Constantini des C, Liat Sikos EN. Anatomical landmarks of radical prostatectomy. *Eur Urol* 2007; 51:629-39.
7. Eastham JA. Surgery Insight: optimizing open nerve-sparing radical prostatectomy techniques for improved outcomes. *Nat Clin Pract Urol* 2007; 4:561-9.
8. Abrams P, Cardozo L, Wagg A, Wein A. Incontinence. 6th Edition. Bristol: United Kingdom; 2017: 2619.
9. Costa JN, Lopes MVO, Lopes MHBM. Simultaneous concept analysis of diagnoses related to urinary incontinence. *Int J Nurs Knowl* 2019; 0(0):1-15.
10. Lee JN, Kim SW, Byeon K-H, Chung J-W, Ha Y-S, Choi S-H, et al. Predictive Factors of De Novo Overactive Bladder after Radical Prostatectomy in Patients with Clinically Localized Prostate Cancer: A Prospective Observational Study. *J Urol Oncol* 2021; 19(2):109-116.
11. Trock BJ, Han M, Freedland SJ, Humphreys EB, DeWeese TL, Partin AW, et al. Prostate cancer specific survival following salvage radiotherapy vs observation in men with biochemical recurrence after radical prostatectomy. *JAMA* 2008; 299:2760-9.
12. Hamdy FC, Donovan JL, Lane JA, Mason M, Metcalfe C, Holding P, et al. 10-Year Outcomes after Monitoring, Surgery, or Radiotherapy for Localized Prostate Cancer. *N Engl J Med* 2016; 375:1415-24.
13. Glickman L, Godoy G, Lepor H. Changes in continence and erectile function between 2 and 4 years after radical prostatectomy. *J Urol* 2009; 181:731-5.
14. Grøn Jensen LC, Boie S, Axelsen S. International consultation on incontinence questionnaire-Urinary incontinence short form ICIQ-UI SF: Validation of its use in a Danish speaking population of municipal





employees. *PLoS One* 2022; 17(4): e0266479.

15. Sacco E, Prayer-Galetti T, Pinto F, Fracalanza S, Betto G, Pagano F, et al. Urinary incontinence after radical prostatectomy: incidence by definition, risk factors and temporal trend in a large series with a long-term follow-up. *BJU Int* 2006; 97(6):1234-41.

16. Yaxley JW, Coughlin GD, Chambers SK, Occhipinti S, Samaratunga H, Zajdlewicz L, et al. Robotassisted laparoscopic prostatectomy versus open radical retropubic prostatectomy: early outcomes from a randomised controlled phase 3 study. *Lancet* 2016; 388:1057-66.

17. Coughlin GD, Yaxley JW, Chambers SK, Occhipinti S, Samaratunga H, Zajdlewicz L, et al. Robotassisted laparoscopic prostatectomy versus open radical retropubic prostatectomy: 24-month outcomes from a randomised controlled study. *Lancet Oncol* 2018; 19:1051-60.

18. Sosnowski R, Szymański M, Wolski JK, Nadolski T, Kalinowski T, Demkow T, et al. Urinary incontinence after radical prostatectomy - experience of the last 100 cases. *Cent European J Urol* 2011; 64(4):213-7.

19. Rajih E, Meskawi M, Alenizi AM, Zorn KC, Alnazari M, Zanaty M, et al. Perioperative predictors for post-prostatectomy urinary incontinence in prostate cancer patients following robotic-assisted radical prostatectomy: Long-term results of a Canadian prospective cohort. *Can Urol Assoc J* 2019; 13(5): E125-E31.

20. Gacci M, De Nunzio C, Sakalis V, Rieken M, Cornu JN, Gravas S. Latest Evidence on Post-Prostatectomy Urinary Incontinence. *J Clin Med* 2023; 12(3):1190.

21. Lepor H, Kaci L. The impact of open radical retropubic prostatectomy on continence and lower urinary tract symptoms: a prospective assessment using

validated self-administered outcome instruments. *J Urol* 2004; 171(3):1216-9.

22. Pereira R, Joshi A, Roberts M, Yaxley J, Vela I. Open retropubic radical prostatectomy. *Transl Androl Urol* 2020; 9(6):3025-35.

23. Wilson RL. Exercise and nutrition induced weight loss for prostate cancer patients. Edith Cowan University, 2020. Available from <https://ro.ecu.edu.au/theses/2370/>

24. Egawa S, Minei S, Iwamura M, Uchida T, Koshiba K. Urinary continence following radical prostatectomy. *Jpn J Clin Oncol* 1997; 27(2):71-5.

