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A clinicopathological study of morbidity and mortality of patients following radical cystectomy

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Abstract

Background: Assessing the prognostic significance of specific clinicopathological features plays an important role in surgical management after radical cystectomy.

Aim & Objective of the study: The current study is done to analyse the perioperative, early and late complications of tumors and also find out the mortality rate during radical cystectomy

Methodology: This is a retrospective observational study conducted at NIZAMS INSTITUTE OF MEDICAL SCIENCES in Department of urology from September 2017 to September 2019.

Results: In the present study, mean age of presentation is 58 yrs and range is 20 to 80 yrs. Among in total study population (60), 83.33% were male patients and 16.66% were female patients. Male: Female ratio is 5:1. All the smokers noted in the study were males. Thirteen members are smokers and all of them are males. The most common age group of presentation is 60-69 years (35%). Followed by 50-59 years (25%) followed by 40-49 years (20%). The most common presentation was painless hematuria seen in 61.66%. Followed by both hematuria and dysuria in 30% followed by only dysuria in 8.33%. Urine leak is the most common early complication seen in 10%. Ureteric stricture (5%), Pelvic recurrence 5 (8.33%) and distant recurrence 4 (6.66%) are the late complications. Out of 60 cases, 54 cases (90%) had high grade tumors while 6 cases (10%) had low grade tumors. Pelvic lymphnode involvement was seen in 18 patients (30%). In remaining 42 patients pelvic lymph node involvement was not seen (70%). Patients with lymph node positivity showed a 52% rate of survival while patients with negative lymph node status showed 80% survival. No deaths were recorded during the perioperative period.

Conclusion: Our results revealed that several clinicopathological characteristics can predict CSS risk after radical cystectomy. Prospective studies are needed to further confirm the predictive value of these variables for the prognosis of bladder cancer patients after radical cystectomy.

Keywords: Clinicopathological, specific clinicopathological, radical cystectomy

Introduction

Radical cystectomy with pelvic lymph node dissection (PLND) is the standard treatment for muscle-invasive bladder cancer, a procedure popularized initially by Whitmore and Marshall [1]. The advent of improved surgical techniques, anaesthesia care and postoperative management has lowered the high complication and mortality rates previously associated with this operation [2, 3]. The highest incidence of transitional cell carcinoma is in the 7th decade. Around 20-40 percent of transitional cell carcinomas consist of a muscle invasion, initially or in progress. Radical cystectomy with urinary diversion remains the standard treatment. Unrecognized distant metastases resulting in decreased survival occur in almost half of patients with high-grade tumours who undergo cystectomy [2, 4]. Radical cystectomy provides excellent local control of the primary tumour and should include the bladder and surrounding perivesical soft tissue, prostate, and seminal vesicles in men and the ovaries, uterus/cervix, and anterior vagina in women.

It entails simultaneous surgery on urinary tract, intestines and lymph nodes; hence, complications frequently occur after this extensive procedure. In the present study reviewed the experience with this operation and analysed the results.

Therefore the present study is done to analyse the perioperative, early and late complications tumour and also find out the mortality rate during radical cystectomy.

Materials and Methods

Study design

This is a retrospective observational study conducted at NIZAMS INSTITUTE OF MEDICAL SCIENCES in Department of urology from September 2017 to September 2019.

After receiving ethics committee approval data was collected from retrospective reviews from our hospital records and by contact with patients.

Study period and Population

Total number of patients who underwent radical cystectomy in the study between September 2017 to September 2019 was 60.

- 10 patients lost for follow-up.
- Remaining 60 cases were included in the study.
- All patients were discussed in detail about the surgical procedure, advantages and complications of the procedure.
- Metastatic status was evaluated before surgery and tumors staged using the Tumors-Node-Metastasis classification.
- Radical cystectomy is done for histologically proven muscle invasive cases
- Follow-up period is two to ninety six months (mean follow-up is 49 months).
- Patients were divided into node-positive and node negative groups and analyzed to assess the survival.
- Patients were evaluated for mental and physical ability to perform stoma care
- Cystoscopy was done in all patients.

Inclusion criteria

- All patients with muscle invasive bladder tumor
- Patients with recurrent and large tumors

Exclusion criteria

- Patients who underwent neoadjuvant chemotherapy.
- Patients who underwent radiotherapy.
- Patients with inoperable tumors.
- Patients who lost follow-up.
- Cardiac and pulmonary evaluation was done in elderly patients

Biochemical evaluation

Haemoglobin, CBP, Serum Creatinine, BUN, Serum electrolytes, BGT, Clotting factors, LFT, Urine analysis, Urine Culture, Urine cytology.

Radiological evaluation

X ray KUB, USG abdomen, CECT abdomen. Endoscopic evaluation cystoscopy all patients were advised to take liquid diet two days prior to surgery. Mechanical bowel preparation was started with PEGLEC solution one day prior to surgery. Clear oral liquids along with IV fluids were given on night prior to surgery.

Urinary diversion was done by ileal conduit in 56 cases and 3 cases had orthotopic urinary diversion.

All cases post operatively were managed by catheterization of conduit with 18Fr Foley catheter, nil per oral, naso gastric tube aspiration, intravenous fluids, maintenance of electrolyte balance, antibiotics, analgesics for 5 days, then soft diet was started.

Catheter in the conduit was removed on 2nd post-op day and ostomy bag was connected, drains were removed on 5th day when output was less than 30ml. Ureteric splints were removed

after 7th post op day.

Follow Up

- All patients were followed 2months to 96 months duration on 6th week, 3rd month, 6th month, and at 1 year and then annually.
- Serum creatinine, BUN, Serum electrolytes, USG and CECT abdomen were done during follow-up.
- One patient developed metabolic acidosis and got treated with sodium bicarbonate
- Urine culture showed bacteruria in 4 cases appropriate antibiotics were given depending on culture and sensitivity

Results and Observations

Table 1: Age distribution

Age in Yrs	No of Patients	Percentage
20-29	2	3.33%
30-39	5	8.33%
40-49	12	20%
50-59	15	25%
60-69	21	35%
70-80	5	8.33%
Total	60	100%

Mean age of presentation is 58 yrs and range is 20 to 80 yrs. Median age of presentation is 60 years. Youngest patient is 27 years old. Oldest patient is 75 years old. Thirteen members are smokers and all of them are males. The most common age group of presentation is 60-69 years (35%). Followed by 50-59 years (25%) followed by 40-49 years (20%).

Table 2: Shows the mode of presentation of patients.

Mode of presentation	No of patients	Percentage
Hematuria	37	61.66%
Dysuria	5	8.33%
Hematuria	18	30%
Total	60	100%

In our study 37 patients presented with hematuria. 5 patients presented with dysuria. 18 patients presented with both hematuria and dysuria. The most common presentation was painless hematuria seen in 61.66%. Followed by both hematuria and dysuria in 30% followed by only dysuria in 8.33%.

Table 3: Gender distribution

Sex	No of patients	Percentage
Male	50	83.33%
Female	10	16.66%
Total	60	100%

50 patients were male and 10 patients were female i.e. 83.33 percent were male patients and 16.66 percent were female patients. Male: Female ratio is 5:1. All the smokers noted in the study were males.

Early Complications

- Urine leak
- Bowel leak
- Wound dehiscence
- Pelvic collection
- Burst abdomen
- Prolonged ileus

- Sub acute intestinal obstruction
- Acute kidney injury
- Sepsis

Most of the complications were managed conservatively. If the pelvic collection was significant ultrasound guided aspiration was done otherwise managed conservatively. Wound dehiscence is managed by daily dressings followed by secondary suturing. Burst abdomen required reoperation.

Most of the patients required one to two units of blood transfusion during the surgery and in immediate postoperative period. On the third day serum proteins were checked and albumin was administered. This has reduced complications like bowel leak.

Table 4: Early complications

Complications	Number	Percentage
Urine leak	6	10%
Bowel Leak	2	3.33%
Wound dehiscence	5	8.33%
Pelvic Collection	2	3.33%
Burst abdomen	1	1.6%
Prolonged ileus	3	5%
Subacute intestinal obstruction	2	3.33%
Acute kidney injury	2	3.33%
Total	23	38.33%

This is the table showing number of patients with early postoperative complications. The early complication rate was 38.33%. Urine leak is the most common early complication seen

Table 6: Type of histology

Type of histology	Number	Percentage
TCC	58	96.66%
SCC	2	3.33%
Total	60	100%

Recurrence and survival

Pelvic lymph node involvement was seen in 18 patients (30%). In remaining 42 patients pelvic lymph node involvement was not seen (70%). All the patients with pelvic lymph node involvement received adjuvant chemotherapy. Higher rate of recurrence is seen with lymph node positivity. Pelvic recurrence is seen in 5 (8.33%) patients and distant recurrence is seen in 4 (6.66%) patients, all in the liver. All of them who had recurrence were patients positive for lymph nodes. Patients with lymph node positivity showed a 52% rate of survival while patients with negative lymph node status showed 80% survival. No deaths were recorded during the perioperative period.

Table 7: Recurrence

Recurrence	No of patients	Percentage
Positive Recurrence	5	8.33%
Negative Recurrence	4	6.66%

Table 8: Lymph node status

Lymphnode status	No of patients	Percentage
Positive	18	30%
Negative	42	70%

Table 9: Lymph node status and survival

Lymph node status	Survival in Percentage
LN Positive	52%
LN Negative	80%

in 10%, followed by wound dehiscence (8.3%), prolonged ileus (5%), bowel leak, pelvic collection, acute kidney injury, sub acute intestinal obstruction (each 3.33%) and least being burst abdomen, in 1.6%.

Late complications

Ureteric stricture is seen in 3 patients (5%). 2 in the right ureteroileal anastomosis and 1 just proximal to left ureteroileal anastomosis. Pelvic recurrence is seen in 5 (8.33%) patients and distant recurrence is seen in 4 (6.66%) patients.

For the patient with ureteric stricture, percutaneous nephrostomy done, and antegrade DJ stenting was done.

1. Adjuvant chemotherapy given to both local recurrence and distant recurrence.

Table 5: Late complications

Complication	Number	Percentage
Ureteric Stricture	3	5%
Pelvic (local) recurrence	5	8.33%
Distant metastasis	4	6.66%
Total	13	20%

Pathology of the tumor

Pathological analysis revealed two cases of squamous cell carcinoma (3.33%) of which one was arising from a diverticulum while 58 cases (96.6%) were transitional cell carcinoma. Out of 60 cases, 54 cases (90%) had high grade tumors while 6 cases (10%) had low grade tumors. One case of micropapillary variant with multiple pelvic lymphnodal involvement, received adjunctive chemotherapy.

Orthotopic diversion

1. Three patients underwent orthotopic urinary diversion.
2. Two were male patients and one is female patient.
3. No complications and no recurrences are seen.
4. All the patients are continent, with normal sexual function and insignificant post void residue.
5. All the patients are on CIC and doing well.

Mortality during follow up

Patients with 8 years, 5 years and 3 year follow ups are present in this study 3 year and 5 year follow ups showed no mortality. 3 deaths were observed in the patients under 8 year follow up group.

Discussion

In India, the crude incidence rate of bladder cancer in males and females is 2.4 and 0.7/100,000 population respectively. In the world, the Crude incidence rate of bladder cancer is 25.4 and 8.54/100,000 population respectively.

Radical cystectomy and PLND has become the principal treatment for muscle -invasive bladder cancer. It is the gold standard for local control and survival of muscle invasive tumors. The aim of the procedure is to remove all cancer in the bladder, pelvis, and regional lymph nodes with a wide soft tissue margin. The plane of dissection is the musculoskeletal boundaries of the pelvis. With the improvement in surgical technique and post-operative care survival is improved and

complications has come down.

In our study the most common age of presentation is 60-70 years (35%) which is nearly similar to study by Nikola Zebic, Stephen Weinknecht, Darko Kroepfl *et al.* [5] (41%) and David Horowitz, PolatTurker, Peter J.Bostrom, *et al.* [6] (42%). The median age of presentation in our study was 60 years in comparison to study by John A Taylor, George A Kuchel, *et al.* [7] in which it was 66 years.

The commonest mode of presentation in our study was painless hematuria(61.66%) followed by both hematuria and dysuria (30%) in comparison to study by V Kumar, AH Lawson where 55% presented with frank hematuria and 20% with irritative bladder symptoms. [8]

The ratio of males to females in our study was 4:1 in comparison to study by David Horowitz, Polat Turker, Peter. J. Bostrom, *et al.* [6] it was 3.6:1. And it was 4. 5: 1 in study by Renate Pichler, Josef Fritz, Isabel Heidegger, *et al.* [9] and it is 5:1.

The early complication rate in our study was 38.33%. Several studies evaluated the perioperative condition of elderly patients undergoing radical cystectomy. Previous studies reported on 21 patients aged > 75 years who had a radical cystectomy with complications after surgery in 28%. [9] In our study the most common early complication was urine leak. It is the same in the study by Wei Shen Tan Benjamin W. Lamb and John D. Kelly *et al.* [10]. In our study the late complication rate was 20% in comparison to Game *et al.* 25%. In most large series perioperative mortality of radical cystectomy is 2-5%. In our study no perioperative deaths were recorded. Similar to our study no deaths were recorded in study by Chang *et al.*, [11] In studies by Srinivas *et al.* [4] reoperation rate is 2-10%. In our study it is 4.75%. Burst abdomen is seen in one patient, in study conducted by Michael Froehner *et al.* [12]. In our study it is seen in one patient. 3 patients developed ureteric stricture and it was managed by percutaneous nephrostomy, and antegrade stenting. Most of the complications were managed conservatively and only one patient required reoperation.

Pelvic recurrence is seen in five patients (8.33%). Similar results i.e. (7.7%) were seen in study conducted by Michael Froehner *et al.* [12]. In previous studies there was pelvic recurrence in 9 patients (7.3%). The incidence of loco-regional recurrence in node positive disease after surgery, in this study was 50%. In modern series, the loco-regional recurrence in node positive disease after surgery was 20%, and the same in node negative disease was 15%. 6 patients presented with distant recurrence (6.66%) and the organ involved was liver, similar to study by Michael Froehner *et al.* [12] Radical cystectomy is a relatively safe procedure when performed meticulously and in organ confined disease.

Conclusion

Radical cystectomy remains the main stay of treatment in muscle-invasive bladder cancer. Complications and survival are better with bladder confined disease compared to non organ confined disease. This is relatively safe procedure with minimal morbidity and mortality in selected patients. Level of satisfaction of urinary diversion with ileal conduit is satisfactory. Pathological nodal status can prognosticate local recurrence.

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Conflict of Interest

None

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